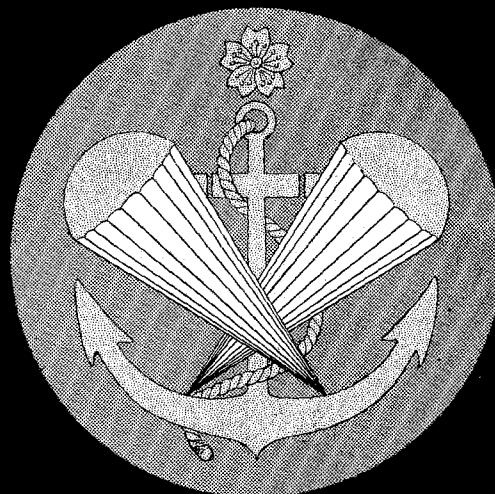


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1 JULY 1945

JAPANESE PARACHUTE TROOPS



MILITARY INTELLIGENCE DIVISION
WAR DEPARTMENT • WASHINGTON, D. C.



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Chapter I. Training

Training of Japanese Army and Navy paratroopers began in 1940 when training courses of 6 months duration were set up at four centers. Arrival of German paratroop instructors in the summer of 1940 gave further impetus to the program which, upon their suggestion, ultimately was highly intensified and curtailed to about 2 months.

By January 1941, about 9,200 men were in training. At Shimonoseki 3,000 men, chosen from the 12th and 18th Infantry Divisions, were being trained. At Shizuoka there were 3,000 from the Nagoya divisional district, and about 1,200 from the troops stationed in Canton were receiving instruction at Hiroshima. Two thousand candidates from the 11th and 19th Infantry Divisions at the same time were undergoing similar training at Himeji.

About 100 German instructors had arrived by the fall of 1941, and approximately 14,700 trainees were reported in an estimated total of nine training centers. In line with German recommendations Army training ultimately was concentrated at a single base, while instruction of naval trainees was centered on Hainan island. Comparable paratroop training was reported proceeding in Manchuria in at least two centers, and several training establishments also were reported in North China near Shanghai, Waichang, Nanking, and Hsiang Fan.

The naval training period was very short in comparison with the Army program. The first class received only 1 week of instruction, while the second class of 600 men received but 10 days. The third and last class, however, was trained for 2 weeks. Upon completion of its training each class was returned to the base at Kurihama which had been selected for the assembly and activation of the entire group. By 1 November 1941 the force was assembled and divided into two groups of 1,000 men each. Strenuous field training then was given to each of these forces, including much work on tactical problems and refresher training in the use of infantry weapons. Original plans envisioned the formation of two battalions, designated the Yokosuka 1st and Yokosuka 3d Special Naval Landing Forces which later came to be known as the Hariuchi (Karashima) and Fukumi Forces. With the outbreak of the war on 7 December 1941 both of these trained forces were ready for employment in paratroop operations.

Training Aims

Japanese parachute troops "must be thoroughly trained to adapt themselves to any unforeseen situation. They must be trained to fight with limited equipment so that, if the parachuted equipment has fallen in some inaccessible area, they can fight their way to it." They are expected to be proficient in the use of as many weapons as possible and sufficiently familiar with enemy materiel to enable them to handle captured weapons. Also stressed is instruction in driving all types of motor vehicles so that captured vehicles may be employed in reaching combat objectives, severing hostile lines of communications, or extending areas of demolitions. Practical engineering, especially demolition procedures, and skillful employment of communications equipment likewise are taught.

Paratroop Qualifications

Age limits for prospective Army paratroopers are from 20 to 25. Trainees are drawn from infantry, engineers, and signal units. Almost all are volunteers, although instances have been noted where men were detailed to training centers without their previous knowledge or consent. Applications for admission to training are stimulated by the higher pay received by paratroopers. There is some evidence that pay is graduated in accordance with the number of jumps made, but in any case it is higher than for comparable ranks in other branches of the Army service. All officers of parachute units are drawn from the Air Force. The maximum age for officers is 28, except for battalion commanders, usually colonels, who may be up to 35 years of age.

Rigorous physical qualifications are enforced as prerequisites for admission to parachute training. The Army examination is known to include testing of prospective trainees in pressure chambers. A whirling globular cage is also employed to determine the trainee's resistance to dizziness. Mental and psychological tests also are administered to secure applicants of the highest possible qualifications.

Naval physical qualifications are also very stringent, but few details are known. The applicant must not be more than 30 years old and he must have completed at least 2 years of naval service. Maximum weight for applicants is 165 pounds, and they are required to have perfect eyesight and hearing, as well as a record of freedom from illness during their naval service.

Besides instruction in jumping and combat techniques, the Army training program includes a considerable amount of mental training. Instruction is given in languages useful in areas of anticipated operations. Courses also are given in geography, topography, and the functioning of signal equipment. In addition, all trainees are expected to become familiar with structural and operational details of planes and aircraft engines.

Training in Technique

Actual Army training in parachute and combat techniques is divided into five stages. During the first stage, the chief emphasis is upon physical preparation. Mat exercises, tumbling, somersaults, and leg-strengthening exercises are practiced. Sports include broad and high jumps, basketball, foot races, and cross-country runs. In the runs, a distance of about $16\frac{1}{4}$ miles normally is covered in $3\frac{1}{2}$ hours. Hand-to-hand combat methods likewise are taught in this stage of the program, with special emphasis upon "judo" and bayonet fighting. Trainees found physically or mentally unfit are eliminated so that only a highly selective group remains.

In the second stage of training, jumps from tables are begun, with the height gradually increased to 12 feet. Methods of hitting the ground and rolling are mastered, preparatory to undertaking jumps with training parachutes, from platforms 12 to 25 feet in height, which feature the third stage of training. During the second and third stages, much attention is paid to instruction in the proper folding, maintenance, and routine inspection of parachutes. Jumps also are made from model plane fuselages at varying heights. Familiarization flights in planes also are made. Aerial acrobatics after the second flight serve to eliminate trainees prone to airsickness or otherwise physically or temperamentally unfit.

Parachute jumps from towers 350 to 400 feet high feature the fourth stage. The chutes are opened by static lines, and oscillation control and steering by manipulation of the shrouds receive suitable emphasis. Control of the parachute also is taught by dangling, with the trainees suspended from the roof of a hangar.

Jumps from planes are undertaken in the fifth and concluding stage of the training. Trainees are taught the free style of jumping wherein opening of the chutes is delayed until an altitude of 250 to 350 feet above ground is reached. The free-fall method is utilized in order to minimize exposure to cold, the danger of anoxemia (lack of oxygen), and the effects of enemy fire. Initial jumps are made from slow-flying aircraft at an altitude of approximately 4,000 feet. The altitude from which the jumps are made gradually is lowered as the trainee acquires experience, while the plane speed is increased. At the conclusion of the program trainees also will have had experience in landing in stiff wind and on rugged terrain. The weight of equipment carried likewise is increased with successive jumps, until the trainee leaps with confidence while carrying a full combat load.

Individual jumps are followed by successive jumps by groups, and the training is concluded by mass jumps. In these, the standard of achievement is for 12 men to jump in 10 seconds, while the transport covers an estimated 750 yards. In an actual training exercise, however, it took eight men 12.6 seconds to jump, and their dispersion on landing was quite haphazard. Yet training literature, without giving performance details, reports



Figure 1.—Japanese paratroops being released from a training tower.

that 12-man jumps have been made successfully. One plane is assigned to every 100 trainees; the transports or converted bombers have troop-carrying capacities of from 8 to 24 men each.

The naval training program, of much shorter duration than that of the Army, is divided into four phases. Physical training, practice in the folding of parachutes, and other pre-jump instruction comprise the first phase. The second phase is a continuation of the first, but in addition trainees are required to make two jumps from planes at an altitude of about 1,000 feet. Physical training and the use of weapons are emphasized in the third phase, which also includes one jump from an altitude of about 500 feet. In the concluding phase of the program, trainees who have qualified are required to make three jumps from an altitude of about 350 feet.

Parachute Jumping Technique

During both Army and Navy training, thorough preparation for jumps is stressed, and presumably many of these precautions are standard practice for activated parachute units. The importance of good living habits is emphasized. Setting-up exercises are advocated before jumps to ensure maximum limberness of muscles and joints.

Each part of the parachute is thoroughly checked prior to every mission. A routine check includes examination of the pack-opening elastics to see that they are properly in line and assurance that static-line pins are properly packed and in perfect working order. Operation of harness fittings and the security of connector-link spacers also are checked prior to donning the parachute, and the static line is carefully examined to ensure that it runs freely.

The slack of the static line is limited to not more than a hand's length; training instructions insist repeatedly that absolutely no more is permissible. Just prior to the jump, another examination is made for excess slack in the static line, and the security of harness fittings and of connector links again is checked. The instructor in training checks all the above items after the trainee has completed his own inspection; in combat jumps each trooper checks the equipment of the man immediately ahead of him in the jump line.

For training jumps, the true air speed is about 110 miles per hour; for combat jumps, however, the speed normally will be 132 miles per hour. Three jumps at the training speed are considered sufficient preparation for jumps from planes moving at combat speed. At the order "prepare to jump" the static-line swivel ring is attached firmly to the proper place in the fuselage. With everything in readiness, the command "stand by for the jump" is communicated by three successive buzzer signals, each of 1-second duration. One purpose of this warning is apparently to give the

paratroopers an opportunity to take a deep breath. This is regarded by the Japanese as a very important preliminary to jumping. When the "stand by" signal is given, the door of the plane is opened, and the first trooper in the jump line assumes his stance. After a 1-second interval, the command to jump is given by a single buzzer sound of 2-second duration. In the event of a sudden emergency which requires the jump to be held up, a rapidly repeated short buzzer signal is given.

When the order is given to jump the parachutist leaps out at about a 70-degree angle of incidence. This angle is assumed in order to allow for the effects of a sudden gust of wind. The jump position is held while falling until the opening of the parachute. The parachutist's back is turned toward the plane so that the suspension lines and canopy will draw out smoothly without fouling. The Japanese parachute is expected to open in 4 seconds, after a free fall of about 150 feet.

When jumping from a plane with a propeller which turns clockwise, the parachutist will twist about five turns to the left before the parachute opens completely. In some observed instances twists of seven turns have occurred. The Japanese paratrooper is trained to turn to the right to counteract this twisting. Such counter twisting has been found difficult in tests, especially if two-point suspension parachutes are used. There also is a tendency for shroud lines to twist that must be counteracted.

After this initial twist is eliminated, the Japanese declare that the rate of descent will be about 15 feet per second. They are taught to decrease oscillation gradually by proper utilization of shroud lines. Nevertheless, oscillation has a tendency subsequently to increase again to about 10 to 15 degrees as the parachutist nears the ground. According to the Japanese, it even may go as high as 20 degrees.

As the parachutist nears the ground he is directed by Japanese instructions to have his back upwind. Obstacles are avoided preferably by steering the chute diagonally downwind despite the resultant increase in descent velocity. Average landing velocity is calculated by the Japanese to be about 15 feet per second, and the resultant shock of hitting the ground is declared to be equivalent to a fall from a height of about 4½ to 5 feet.

Use of Emergency Chutes

Emergency parachutes usually are carried by Japanese paratroopers in both individual and mass jumps. Such chutes develop at an air velocity of considerably less than the 10 yards per second required for the main chute. When using the Type 97 (1937) as an emergency chute, the suspension lines are tucked in as tightly as possible. Ordinarily, the rip cord of the emergency chute is pulled if the main chute fails to open in the normal 4-second period. Japanese critiques on the testing of chutes, however, deprecate the use of emergency chutes as "makeshift and unsatisfac-

tory," and insist that the reliability of the main chutes should obviate the need for emergency equipment.

Mass Jumps

For mass jumps, either in training or combat, the ideal drop area is considered to be a level field on which 12 men can jump from each plane of a 5- to 9-plane formation, with one run over the area. An area 100 yards long and about 200 yards wide is considered suitable for such a dispersion. In actual maneuvers, however, much larger areas were selected. High wind velocity and plane altitudes in excess of normal necessitate selection of a larger dispersal area or turn-abouts by the planes.

If a drop area that conforms to ideal specifications cannot be found, alternates are used wherein width of the area is sacrificed without loss of the advantage of level terrain. The transports make several runs over drop areas of this type to compensate for the narrowness of the dispersal area.

In mass jumps, the command "prepare for jumping" is given about 30 minutes before the plane is expected to be over the drop area. This command requires the paratroopers to check their equipment, and when the inspection is completed the senior paratrooper reports "all clear for jumping."

The order "stand by to jump" then is given by buzzer signal. At the buzzer signal to jump, each trooper jumps in turn, at 1- to 1½-second intervals, looking out for the static line of the man immediately ahead. The hook of the static line is led until a clicking sound is heard from the after end of the static cable. As soon as this is heard, the trooper jumps.

Use of Cargo Chutes

Cargo chutes dropped with weapons and equipment are colored distinctively to facilitate their prompt and easy recognition while in the air. Cargo chutes and chutes carrying personnel are generally not dropped simultaneously, according to Japanese instructions, since cargo chutes cannot be controlled. Indeed, cargo ordinarily will be carried in separate planes or even in a separate formation. Tactically, this has been a weakness in Japanese practice, for in the Palembang operation all equipment was concentrated in two planes, one of which crashed too far away from the personnel dispersion area to permit recovery of the equipment.

The altitude from which equipment is dropped, the Japanese teach, should be the minimum that will ensure landing after oscillation presumably has ceased. Ordinarily this will mean that the equipment will hit the ground about 10 seconds after release. The center of the personnel

dispersion is chosen as the dropping point for the equipment, and wherever possible the personnel should be able to crawl to the cargo chutes to secure their equipment while retaining the prone position. Recent instructions direct that the equipment of a paratroop tactical unit be carried in the same formation as the personnel and dropped in the same area.

Maneuvers

A number of training maneuvers have been practiced by Japanese paratroop trainees. In one exercise, two platoons were dropped in a simulated enemy rear area to carry out preassigned demolitions. In a second maneuver, two platoons were dropped to simulate tactics utilized in covering an airborne battalion discharged by landing planes. The same problem was posed in another exercise, but the paratroopers were covered in their landings and subsequent operations by strafing aircraft. The most ambitious training exercise reported to date employed a company of paratroopers which was assigned the mission of seizing terrain features to assure the success of a subsequent infantry attack.

Several tentative conclusions were reached by the Japanese on the basis of such maneuvers. For example, employment of paratroopers for demolitions was considered unprofitable, yet one important mission assigned to parachutists in the abortive operation on Leyte was the destruction of American aircraft on the landing strips. The Japanese also appear to realize that paratroopers alone cannot accomplish an important mission unless they are relieved or reinforced quickly by ground units. Nevertheless, this principle has not been observed in some airborne operations. For a time at least, there seems to have been some doubt in Japanese quarters as to the need for special training for paratroopers. Misgivings in regard to the efficiency of the training program may have arisen partly from the relatively high casualties sustained by trainees on maneuvers. In one exercise where 400 men were dropped, 12 were killed; in other maneuvers, two out of 15 and seven out of 360 paratroopers were killed. Recent reports, however, indicate that paratroop training has been considerably expanded in order to fill the complements of the larger units recently organized, or in process of formation.

Faults

A number of faults in jumping technique have been attributed to imperfect training, failure to maintain standards already achieved by constant practice, and carelessness of experienced men who acquire a "belittling frame of mind" in respect to the hazards of parachuting. Casualties and injuries in jumping have been traced to lack of sufficient

body rigidity, particularly of shoulders and chest, to control the shock incident to opening of the chute. Lack of experience in landing in high wind also has caused a number of injuries, and on occasions has led to unexpected water landings. Landings in water have constituted a serious danger to personnel because of undue delay in shedding the harness despite the quick-release features of the chute designed to facilitate this.

Ankle and leg injuries have been too common, according to Japanese reports, because of the tendency of paratroopers to spread their legs just before hitting the ground, despite emphatic training admonitions against this practice. In mass jumps there has been too much eagerness to complete the drops within the theoretical maximum time. The result has been comparative neglect of jumping form on the part of individual parachutists, with the consequent increase in injuries and even fatalities.

Chapter II. Organization

Army Paratroop Units

History

Japanese Army Air Force raiding (*Teishin*) units have been known to exist since 1941. Early in 1944, these consisted of a raiding brigade, raiding regiments, and raiding flying regiments. During the latter part of the year, the expansion of these units was completed with the appearance of the raiding group (*Teishin Shudan*), a command organization comparable to a division. Since this study is confined solely to paratroop units, a complete study of the units of this raiding divisional organization is not given here. The three types of raiding units which are employed in paratroop operations are: the raiding group, raiding flying brigade (*Teishin Hikodan*), and raiding flying regiment (*Teishin Hikosentai*).

Raiding Group (*Teishin Shudan*)

The raiding group (*Teishin Shudan*) is the highest echelon of the raiding organization. At present, only one, the 1st Raiding Group, has been identified. In combat in the Philippine Islands, the 1st Raiding Group was under the operational control of an air army. Commanded by a major general, it was composed of a headquarters, a flying brigade, a raiding brigade, two glider infantry regiments, a raiding machine-cannon unit, a raiding signal unit, and a raiding engineer unit. This raiding group had an estimated total strength of 5,575 officers and men. (See Figure 2.)

Raiding Brigade (*Teishin Dan*)

The raiding brigade (*Teishin Dan*) is the highest echelon of the parachute troops. Two brigades have been identified, one of which is subordinate to the raiding group, and the other to an air army. The commanding officer may be a colonel or lieutenant colonel. The basic organization consists of a headquarters and two raiding regiments and has an estimated total strength of 1,475 officers and men.

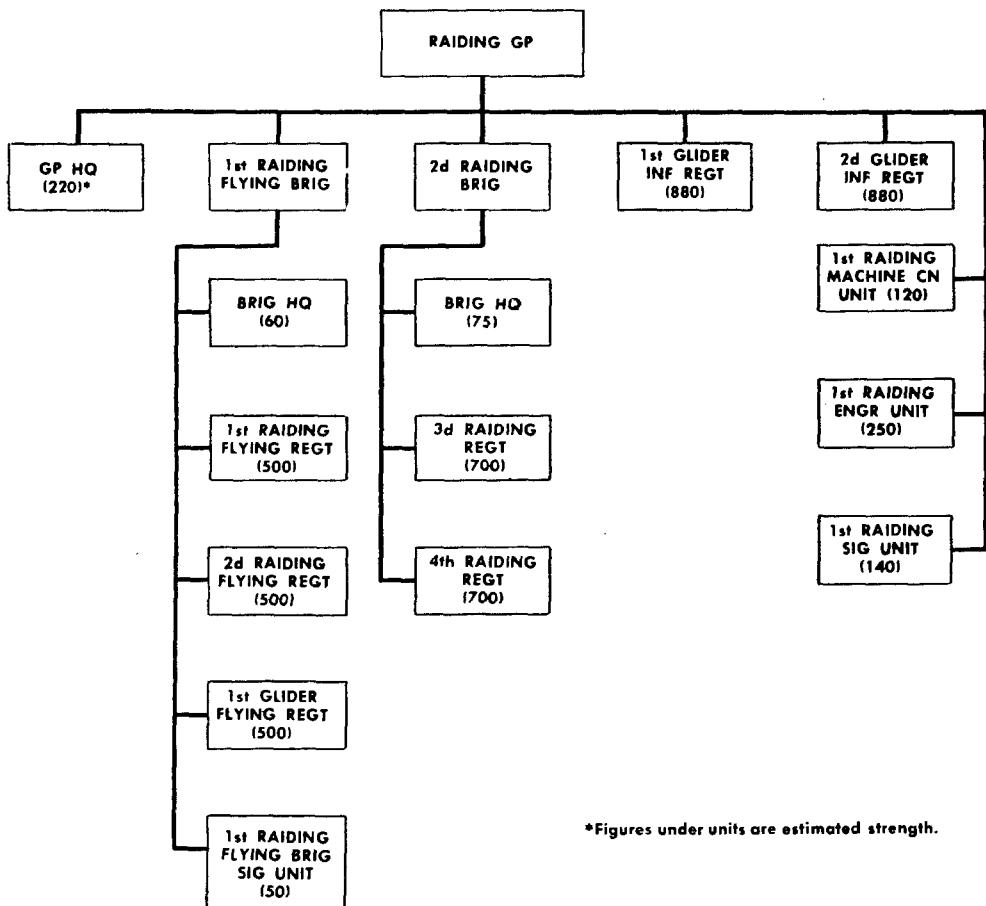


Figure 2.—Raiding group (*Teishin Shudan*).

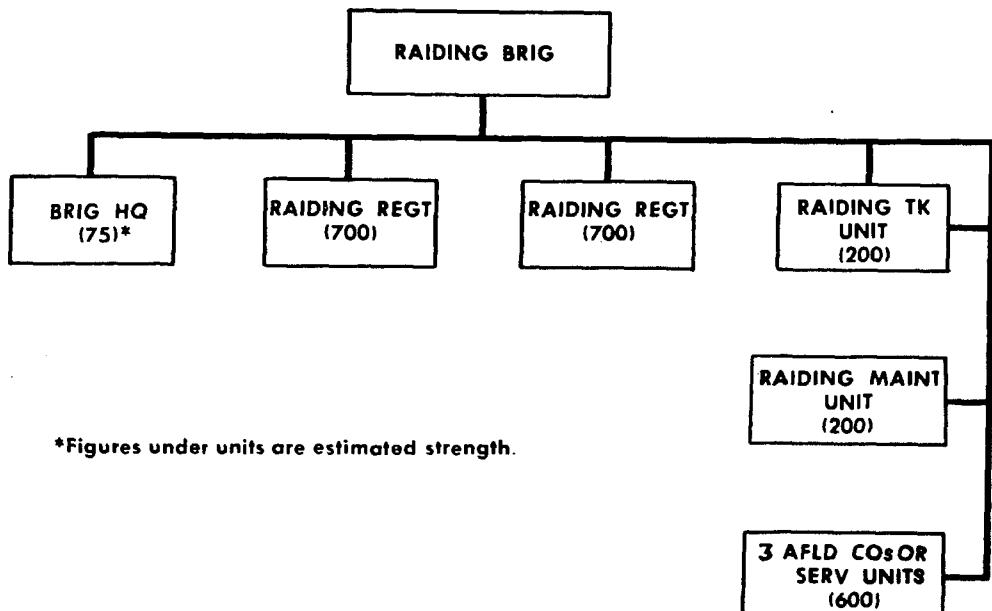


Figure 3.—Raiding brigade (*Teishin Dan*).

Other component units may be added to the basic organization. For example, in addition to two raiding regiments, a raiding brigade (in December 1944) included a raiding tank unit, a raiding maintenance unit, and three airfield companies. The estimated total strength of the raiding brigade is 2,475 officers and men. (See Figure 3.)

Raiding Regiment (*Teishin Rentai*)

The raiding regiment (*Teishin Rentai*) is a paratroop unit, transported by the raiding flying regiment. It is commanded by a lieutenant colonel or a major. Its basic organization consists of a headquarters, three infantry companies, a heavy-weapons company, and a signal unit. The estimated total strength of the basic organization is approximately 700 officers and men. Other units may be added to this organization. For example, a construction unit and a liaison unit were included in one raiding regiment.

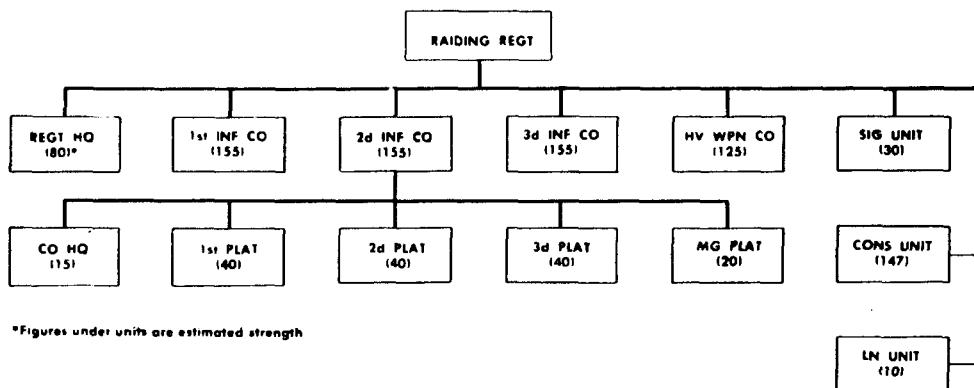


Figure 4.—Raiding regiment (*Teishin Rentai*).

Information on the armament of the raiding regiment is very limited. Each rifle company is armed with rifles, grenade dischargers, and light machine guns. The armament of the heavy-weapons company is not known, but it possibly includes heavy machine guns and mortars. The total strength of one identified raiding regiment was approximately 860 officers and men. (See Figure 4.)

Raiding Flying Brigade (*Teishin Hikodan*)

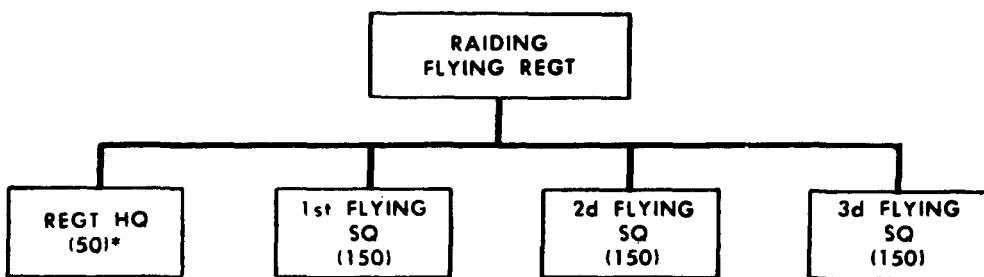
The raiding flying brigade (*Teishin Hikodan*) is a new organization, established at the same time as the raiding group. It has command over all troop-carrying units in the raiding organization. The brigade consists of two raiding flying regiments, one glider flying regiment, and a brigade signal unit.

The organization of an identified raiding flying brigade is shown in Figure 2 as a part of the 1st Raiding Group.

Raiding Flying Regiment (*Teishin Hikosentai*)

The primary function of the raiding flying regiment (*Teishin Hikosentai*) is to transport the paratroop units. When not engaged in this, the flying regiments are used by the Japanese Army Air Force. The organization of the two raiding flying regiments which have been encountered is similar to that of normal combat flying regiments. It consists of a headquarters unit and three squadrons and is commanded by a lieutenant colonel or major. The estimated total strength is approximately 500 officers and men. It has approximately 35 aircraft. One report indicates that the Japanese may be intending to use raiding flying regiments consisting of as many as six squadrons. The aircraft are usually Topsys, but some converted Sallys are used. In the Leyte operation each plane carried 10 to 13 paratroopers and a crew of three to five.

The organization of the 2d Raiding Flying Regiment is shown in Figure 5.



*Figures under units are estimated strength.

Figure 5.—Raiding flying regiment (*Teishin Hikosentai*).

Naval Paratroop Units

Only two Japanese naval units have been identified as parachute units—the 1st and 3d Yokosuka Special Naval Landing Forces, organized in October 1941. Each had a Table-of-Organization strength of 844 officers and men. Their duties were similar to those of the Army parachute units, and in addition included guard or security functions. After engaging in the Netherlands East Indies campaign in early 1942, they were returned to Japan and combined. This combined unit was designated the Yokosuka

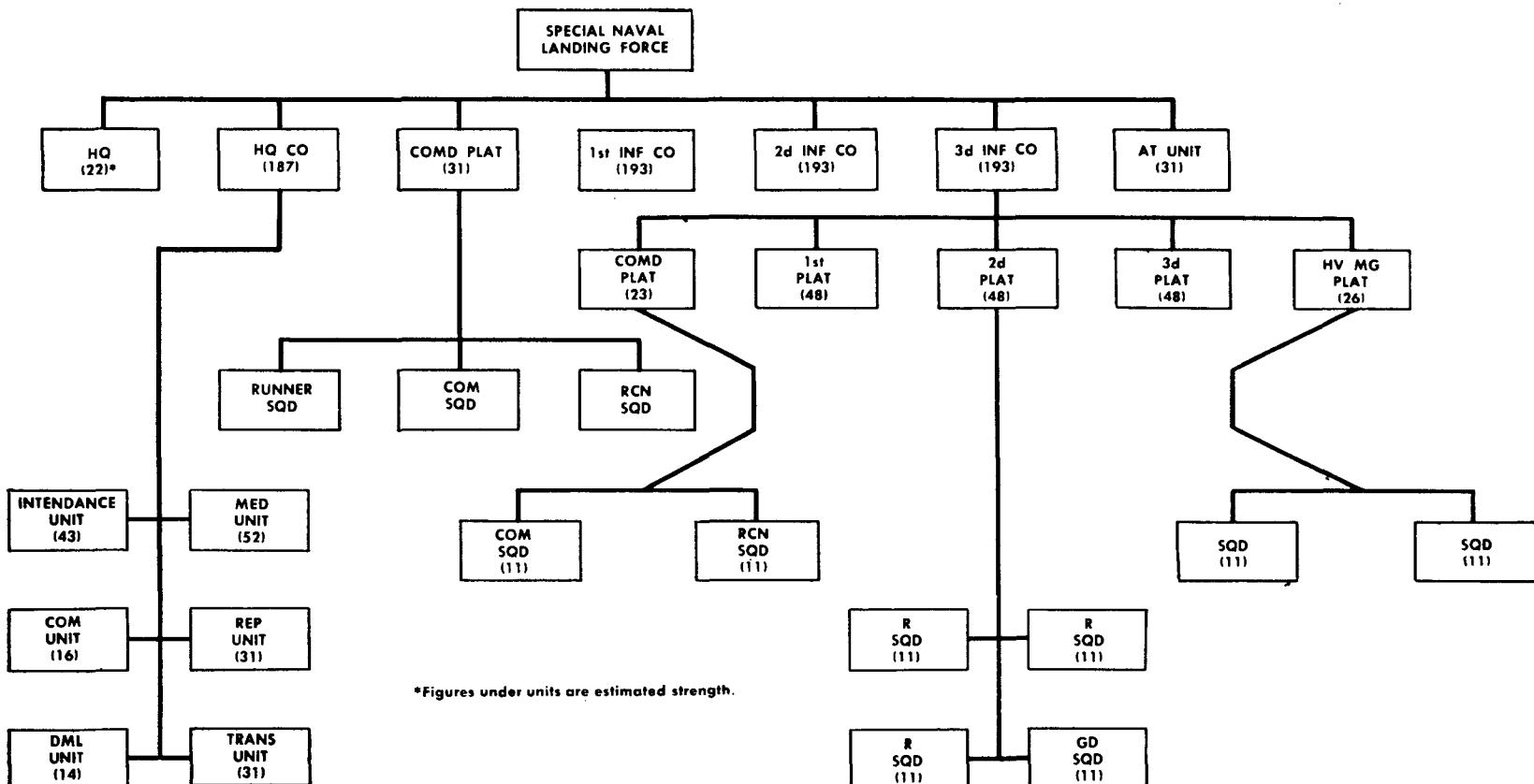


Figure 6.—1st Yokosuka Special Naval Landing Force.

1st Special Naval Landing Force and has a Table-of-Organization strength of 1,326 officers and men.

1st Yokosuka Special Naval Landing Force

At Saipan this unit had a total strength of approximately 850 officers and men and consisted of a command platoon, a headquarters company, three infantry companies, and an antitank unit.

The estimated total armament of this Special Naval Landing Force was as follows: 510 rifles; 36 grenade dischargers; 27 light machine guns; 6 heavy machine guns; two 37-mm antitank guns.

Each rifle company was armed with 134 rifles, 12 grenade dischargers, nine light machine guns, and two heavy machine guns. The antitank unit was armed with two 37-mm antitank guns. (See Figure 6.)

Chapter III

Tactics of Japanese Paratroops

Doctrine

Introduction

The tactical employment of Japanese parachute troops has thus far been limited. The paratroop operation, on Leyte Island, in early December 1944, involved projected use of about 700 airborne troops, and it seems likely that the Japanese have not abandoned plans for the continued use of parachutists. They have studied the parachute operations of other armies and have paid particular attention to German operations, and to Allied airborne activities during the invasion of the European Continent.

In principle, the Japanese follow the conventional doctrine that paratroops should operate with supporting arms and in coordination with ground troops. Both the Japanese Army and Navy have had parachute units, and the tactics employed by these branches of the service have been quite similar.

In the employment of paratroopers, the Japanese have emphasized the role of the individual soldier, equipped with small arms and indoctrinated with suicidal impulses. Such emphasis has caused the expenditure of personnel and materiel with little tactical gain.

Missions

Tactically, the Japanese have used parachute troops in missions of a conventional nature. As often happens in the case of the Japanese, there is a considerable difference between the planning of an operation and its execution.

Paratroopers have been used to delay a retreating enemy until ground forces could come up, or have been assigned the mission of capturing intact vital installations, including oil refineries and airfields. Other missions have included the attempted destruction of Allied aircraft and occu-

pation of landing fields in an effort to assure the arrival of a Japanese convoy of reinforcements by sea, unhampered by Allied aerial activity.

Reconnaissance

Japanese doctrine prescribes a thorough reconnaissance of the proposed landing area prior to the assault. Reconnaissance is made by airplane, submarine, fifth columnists, and other methods. City areas, marshland, and wooded areas and localities where brush and vegetation are higher than a man are avoided. Mountainous or hilly regions are not considered except where elevations slope gently. Soft ground such as sand and silt is believed to be ideal for landing purposes. Hard surfaces such as concrete also are deemed excellent for the Japanese believe that the hardness of such surfaces is offset by the absence of obstacles.

Reconnaissance is also made to determine the extent of defense preparations, including the nature and type of obstacles to be found on the prospective landing area, the location and strength of enemy reinforcements (especially tanks and armored vehicles), and meteorological conditions which might have an effect upon the operation.

Surprise is considered to be the all-important element, and reconnaissance proceeds with extreme caution when there is a possibility that it will disclose the plans of the Japanese.

Preparation for the Attack

The Japanese consider that the ideal landing area is a locality where troops can assemble easily after the jump. The attack objective should be within 3 miles or less from the landing site, although in actual operations the Japanese have landed as far as 12 miles from their objective. If the landing point is too far from the objective the Japanese feel that the element of surprise will be lost, and the enemy will have additional time to make defensive preparations.

The paratroopers are briefed in detail upon completion of the reconnaissance. Frequently, annotated aerial photographs of the installations to be seized are issued, and often rehearsals are held. Assembly areas to be used before and after the assault are selected.

In actual practice, orders for the operation have been specific, covering phases, objectives, and tactics in minute detail. Communications and signal systems are established, with air-ground communication generally effected by panels. Between units on the ground, radio may be used, or improvised methods, such as the sounding of musical instruments and distinctive noises, may be adopted. The latter measures, however, are probably for identification among the supporting units rather than for communication.

The most suitable time for the jump is considered to be dawn or dusk, with dawn being preferred. In actual practice, however, the Japanese have made jumps at other times, including broad daylight.

Japanese doctrine dictates that the jump be preceded by aerial bombardment. If the position of the defender is organized in strength, steps must be taken to neutralize it temporarily during the descent. The jump is timed to coincide with the moment bombs are exploding on the ground.

In the attack on vital installations, such as airfields and objectives which the Japanese desire to use and maintain, care is taken so that the bombardment does not cause more damage than is absolutely necessary. To prevent a counterattack during the assembly of the parachutists on the ground, strafing and low-level bombing continue until the troops have been organized into prescribed combat formations. The Japanese show little concern for casualties among their own troops that may result from the strafing and bombing.

In order to take full advantage of surprise, the first wave to land is as strong as possible, with the jump being made from an average altitude of 300 to 400 feet. Smoke may be used to cause confusion on the ground and to conceal the direction and extent of the paratroop attack.

The Attack

While sources are at variance as to minor details, it is believed that the basic unit of the attack is a V-shaped formation of three planes in which the lead plane flies at the point of the V with one plane echeloned to the right and one to the left rear. Four V's each of three aircraft make up a squadron. The regimental formation may consist of up to six squadrons.

Japanese rifle and light-machine-gun formations, in general, will take 3 minutes to make ready for combat from the moment they leave the plane. Heavy-machine-gun and antitank units, of squad strength, require 8 and 10 minutes respectively. A platoon will require 10 minutes to organize from the time of the drop, and 12 minutes if it is equipped with heavy machine guns. A unit of company size, the Japanese say, should be able to organize in about 15 minutes, while 1 hour and 45 minutes are needed effectively to organize a regiment for combat. In actual practice, these time factors do not appear to have been approached closely.

According to Japanese regulations for the use of parachutists, the troops should jump only after antiaircraft opposition has been neutralized, and after elimination of the danger of a counterattack before the troops can organize on the ground. Assembly points are indicated, but the Japanese often do not organize into any definite formation after reaching the ground.

Upon landing, the Japanese often will wait until nightfall before launching the attack. This is particularly true when the relative fire power of the parachutists has been determined to be weak. Reserves apparently are kept in readiness at base airfields, and these are committed upon call from the attacking forces. Once on the ground, the individual paratrooper makes for the nearest supply chute. In order to facilitate their location, supply chutes are spotted while still in descent, and no time is lost in breaking open supply containers and distributing the materiel.

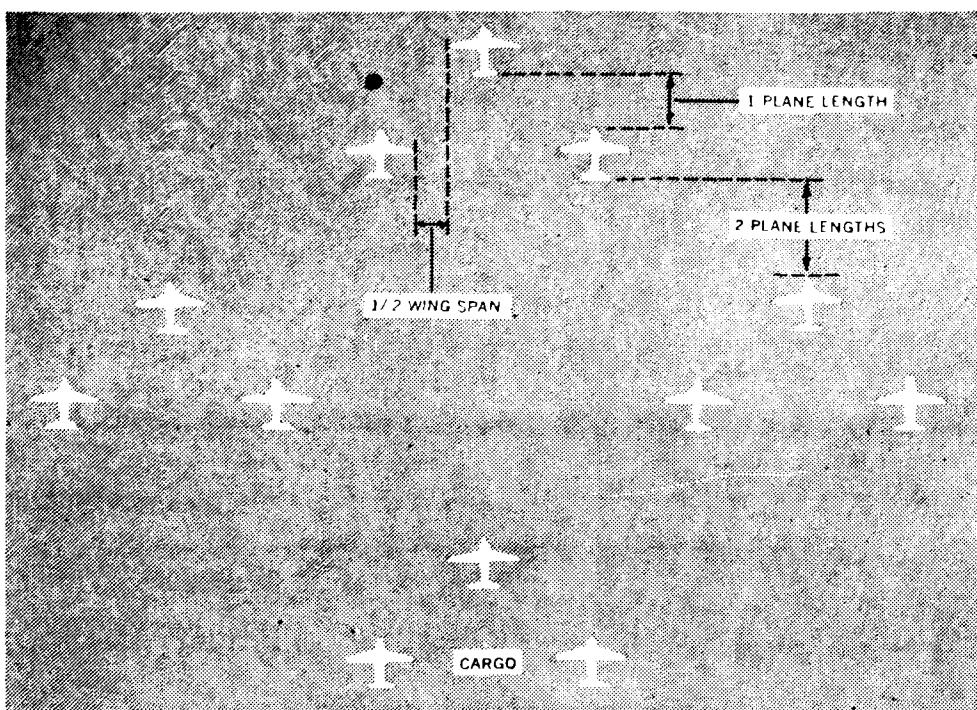


Figure 7.—Squadron formation 1. Squadron formation 1 consists of four V-shaped formations, each of three aircraft. Three of these fly in an arrowhead formation, with the fourth V of three planes flying to the rear. The nine planes of the first three V's carry personnel; the three planes in the fourth V carry materiel. Slight variations in altitude between the V formations may be made. Squadron formation 1 is used in regimental formations 1, 2, and 3.

The nature of the terrain and the assigned mission will determine the type of tactical organization which is adopted. Until the force assembles, however, the paratroopers, regardless of rank, are instructed to engage in individual combat wherever opportunity offers. When changes in the plan are probable, because of circumstances not apparent at the time of the planning, troops generally are briefed in alternatives which may be adopted after the landing.

Tactics employed by the individual on the ground parallel those employed by Japanese small infiltration-suicide units. In the seizure of

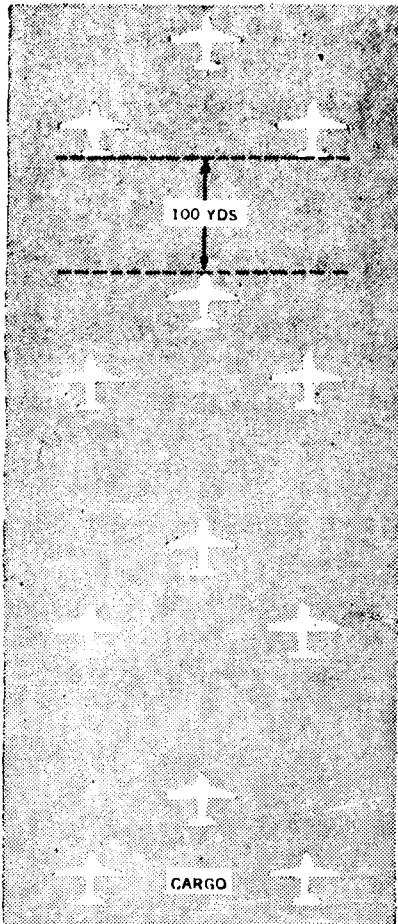


Figure 8.—Squadron formation 2. Squadron formation 2 consists of four V-shaped formations, each of three aircraft, forming a column in line. The nine planes in the first three V's carry personnel; the three planes in the fourth V carry materiel. Slight variations in altitude between the V formations may be made. Squadron formation 2 is used in regimental formation 4 and may be employed in hours of darkness, where maneuverability is required or where the drop area is narrow.

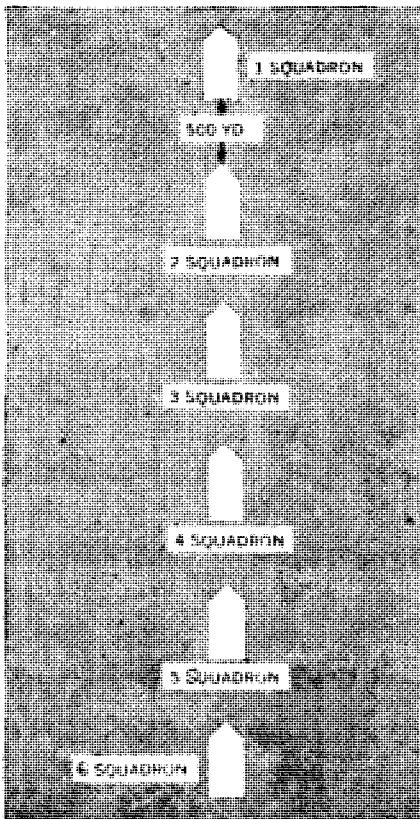


Figure 9.—Regimental formation 1. Regimental formation 1 consists of up to six squadrons, each in squadron formation 1, forming a column in line. Each squadron's altitude varies from 30 to 150 feet higher than the squadron immediately before it. This formation is used principally at night or where the dropping of both personnel and materiel is made at the same point.

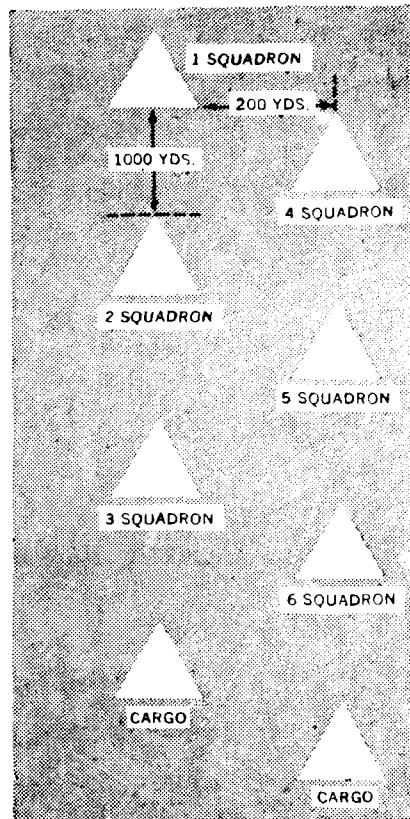


Figure 10.—Regimental formation 2. Regimental formation 2 consists of up to six squadrons, in two columns. Each squadron is in formation 1, except that cargo planes appear to be withdrawn and fly in the rear of each column. Altitude of squadrons varies from 30 to 150 feet higher than the squadron immediately before it. This formation is used where the drop area is wide.

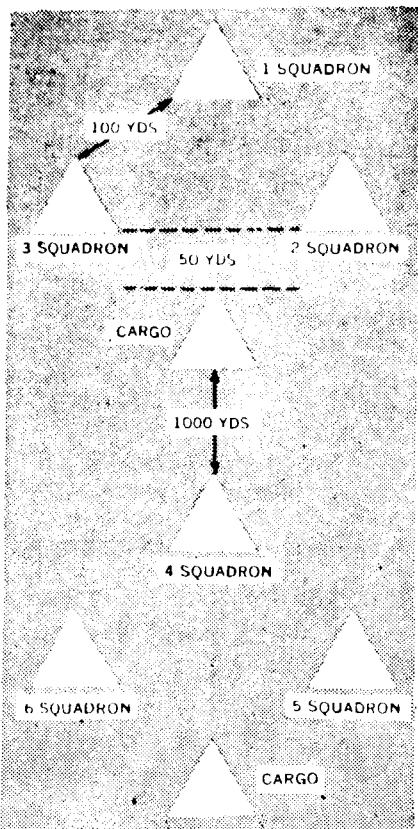


Figure 11.—Regimental formation 3. Regimental formation 3, consists of one or more V's of squadrons. Each squadron employs squadron formation 1, with the cargo planes of all squadrons withdrawn and flying in the rear. Altitude of squadrons varies from 30 to 150 feet higher than the squadron immediately before it. This formation is used where the drop area is relatively wide.

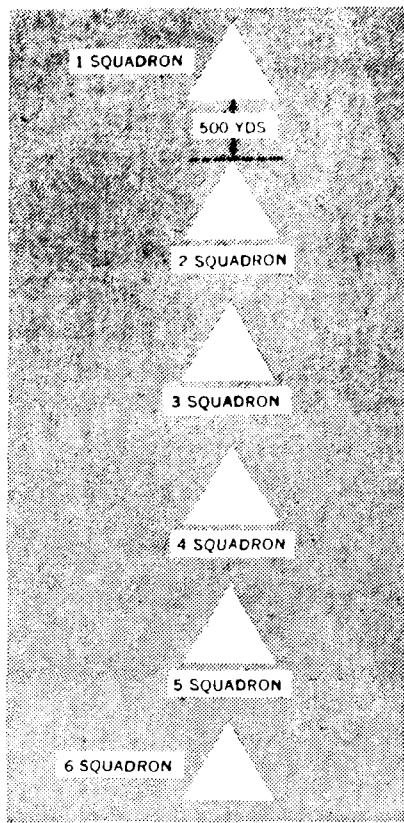


Figure 12.—Regimental formation 4. Regimental formation 4 consists of up to six squadrons each in squadron formation 2. The rear squadrons may arrange themselves somewhat to the right or left of the front formations. This formation is to be employed when maneuverability is required or where the drop area is narrow. Slight variations in altitude between formations may be made.

an airdrome, the Japanese will organize defenses at the logical approaches to the field and construct obstacles and barricades across roads leading to the airfield. In one instance, captured motor vehicles were used for this purpose. Such road blocks were then covered by machine-gun fire. In one operation, the parachutists formed into three separate teams, each of which seemed to have a definitely assigned objective. These teams appeared to act independently of each other during the entire operation.

Actual Paratroop Operations

Palembang

Japanese training plans envisioned a 3-month period of practice operations in China prior to commitment of parachute troops against the Allies. When the campaign against Java and Sumatra began, however, it was evident to the Japanese High Command that use of paratroops offered the only hope of seizing the great oil refineries at Palembang before they were demolished by the British and Dutch defenders. Therefore, despite the incompleteness of its training, a parachute battalion was committed to an attack on the airdrome and refineries of Palembang, on the Moesi River in southeastern Sumatra, on 14 to 16 February 1942.

Dutch and British troops defending the area were supported by anti-aircraft units grouped under the command of a provisional heavy anti-aircraft regiment. The regiment consisted of two heavy antiaircraft battalions, each armed with eight 3.7-inch guns; a light antiaircraft battalion, armed with twelve 40-mm Bofors automatic antiaircraft guns; and a light antiaircraft unit, armed with three of the Bofors weapons. The regiment had been well trained in defense against paratroopers. Eight 3.7-inch antiaircraft guns and seven 40-mm Bofors were set up in a perimeter for the defense of the airfield. Four of the 3.7-inch guns and four Bofors weapons were emplaced for the defense of the refineries at Pladjoe, 4 miles east of Palembang; the same protection was set up for the refineries at Soengei Gerong.

Missions of the attack were clear—to capture the airdrome and seize the refineries at Pladjoe and Soengei Gerong before British and Dutch defenders could destroy them. On the whole the operation was well planned and skillfully executed; weaknesses in the over-all strategy were not attributable to any intrinsic defect of the paratroop operation but rather to the inability to bring up supporting troops to hold and exploit the initial gains.

High altitude bombing by waves of medium bombers preceded the paratroop attack, but strafing, which was a prominent feature of later Japanese airborne attacks, was absent from the Palembang operation, and this deficiency considerably enhanced the difficulties of the attackers.

At about 1830, 14 February, approximately 70 Lockheed Hudsons, with Royal Air Force markings for deception, flew over the Palembang area in two waves. About 350 paratroopers were dropped from each wave from a height of about 600 feet; it was estimated that each plane carried from seven to nine men. Equipment was dropped with cargo chutes from



Figure 13.—Palembang, Sumatra, looking northeast. Pladjoe refinery in foreground, Soengai Gerong refinery in background.

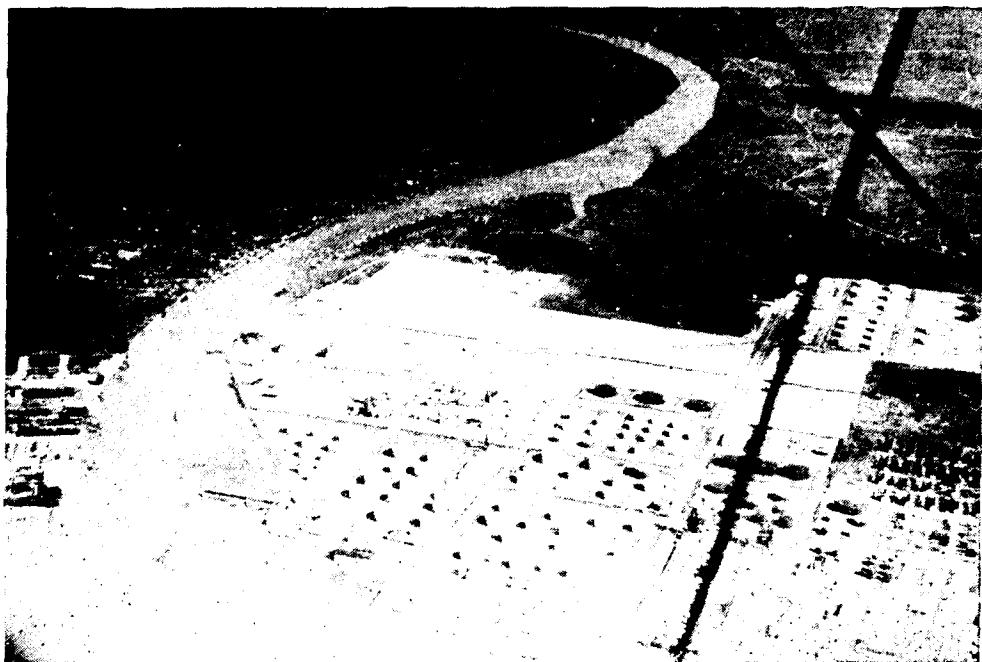


Figure 14.—Oblique view of Pladjoe refinery. Soengai refinery on left margin. Komering River empties into Moesi at lower left.

one of two planes assigned to this mission; the other was shot down. The troops were dropped about 5 miles from the airdrome in an area astride the Moesi River. Their drop area apparently was chosen to cut the road between the airfield and the town of Palembang. Antiaircraft fire was so effective that the Japanese pilots, some of whom had never been under fire, flew too high, and therefore the paratroopers were too widely scattered and experienced difficulty in prompt assembly.

The paratroopers were dressed in greenish-khaki uniforms and wore gloves and crash helmets. They were armed with rifles, pistols, submachine guns, and light machine guns. In addition to rations they carried cigarettes, money, and water.

Immediately after landing the paratroopers assembled in three groups. The largest group, of about 300 men, apparently was assigned the mission of cutting the road between the airfield and Palembang; two other groups of approximately 200 men each set out to seize the refineries. The group assigned to the operations to cut off the airdrome split into three parties. One party moved against the only vital road while the other two attacked British antiaircraft gun positions. Each party acted independently of the others. The plan apparently envisioned an eventual envelopment of the entire perimeter of the field and subsequent convergence for the final assault on hangars, shops, and other installations.



Figure 15.—Vertical view of refineries at Palembang. Pladjoe refinery at left; Soengai Gerong refinery at right. Moesi River flowing from left to right.

The party operating to destroy communications between the town and the airfield captured a Dutch armored car in which a hastily organized crew sped toward the town. On the way, several Dutch vehicles, including a gasoline truck, were seized and overturned to form an effective road block covered by a light machine gun. This road block was organized to prevent withdrawal of the British antiaircraft guns and to interdict the road to such reinforcements as might be sent from Palembang. No attempt to capture the airfield was planned for the first day's operations, which apparently were intended merely to cut communications and facilitate later landings.

Most action centered around the road block where British and Dutch troops attempted to silence the Japanese machine gun. This was a necessary preliminary to removal of the block and withdrawal of the antiaircraft guns which were being strongly attacked by paratroopers assigned to this mission. Japanese snipers who had climbed into trees immediately after landing kept up incessant fire; these finally were liquidated by the British who even turned a 3.7-inch gun against them in a rather unconventional utilization of direct fire. The Japanese crew that manned the captured

Dutch armored car finally was killed; and by the afternoon the machine gun covering the road block was destroyed by fire from a light mortar brought up for the purpose. A Bofors gun seized by the Japanese early in the operations likewise was neutralized, and the paratroopers defending it were killed. Only two of the British antiaircraft guns could be moved by the time the road block was cleared, and a flat tire on one of these necessitated its abandonment after it was made unusable.

At 1000 and again at 1400 hours on the 15th two more drops were made near the airdrome. These reinforcements provided sufficient impetus to enable the Japanese to push on to the field which they fully occupied on the 16th.

The attack on the refineries was a complete failure. Sixteen Japanese planes had been shot down by the antiaircraft defenses around the installations. A small number of paratroops actually landed within the enclosure of the Pladjoe refinery, but a British antiparachute squad had preceded them and, with the aid of some Dutch troops, effectively engaged the Japanese and brought the situation under control. All the parachutists dropped over the Soengei Gerong refinery hit the ground outside the enclosing fence of the plant and were liquidated by the alert ground defense units. All in all the parachute attack on both refineries failed to halt the demolition work already begun so that when a seaborne Japanese force took Palembang on the 15th both the refineries were badly damaged.

The attack as a whole gave evidence of careful planning, and the paratroopers apparently had been carefully trained for missions of this type. Serious tactical mistakes were committed, however, and these precluded the success of the attack. Failure to strafe the airfield was perhaps the most serious blunder. The bombing of the field from high altitude destroyed a number of British planes and damaged several installations on the field but left the antiaircraft guns virtually intact, and the defending personnel sustained few casualties before the paratroopers hit the ground.

All Japanese equipment, aside from that carried by the individual troopers, was carried in two planes. One of these was shot down, while the other circled widely and dropped its cargo apparently indiscriminately. Great difficulty and delay therefore were experienced by the Japanese in finding their equipment and assembling into combat groups according to plan. Intervals between individual jumps were too long, contributing to the excessive dispersion of the paratroopers, although the relatively high altitude from which the jumps were made was primarily responsible for this weakness.

Japanese troops frequently have shown the ability to profit by past mistakes, and proof that the lessons of the Palembang attack made a lasting impression soon was afforded in the attack on Koepang in Timor, where

the well-timed and well-executed attack showed that the mistakes of the earlier venture had been corrected.

Operations at Koepang in Timor

The attack on Koepang in Timor came 21 February 1942, one week after the Palembang operation. Five transports dropped parachutists over the southernmost tip of Timor as a feint to distract attention from the real attack on the Koepang area.

The objective of the main Koepang attack was to secure a position astride the Allied line of communications. A flat drop area was chosen that was partly covered by high palm trees, 15 to 20 feet apart. The area was 1½ miles from the most advanced Allied defense positions and about 5 miles from the fixed defenses of the main line of resistance.

Paratroops were dropped at about 0830 on two successive days. Troops dropped the second day reinforced the first echelon, and a seaborne invasion of 18,000 men was timed to capitalize upon the success won by the paratroopers. Each day 20 to 25 Douglas-type transports, escorted by bombers and fighters, came over the area in two waves. There was no aerial opposition, and virtually no wind was blowing. Heavy bombing and strafing of ground defense installations were conducted from low level until the paratroopers hit the ground, and the paratroopers fired sub-machine guns while descending in a further effort to pin down or liquidate defending personnel.

About 350 men were dropped from an altitude of about 300 feet each day. The jumps were made from the bellies of the transports; the troopers apparently were carried along a static rail by the slip stream of the plane until a catch in the tail released the rip cord. Each plane carried 15 to 25 men, apparently organized in groups of six to eight men each. Section leaders had parachutes colored blue, while platoon commanders used red chutes.

Paratroopers wore green uniforms, which buttoned up to the neck, and rubber boots. Most were armed with submachine guns or light machine guns. All wore compasses strapped to their wrists, and a radio-telephone set was carried by one of the paratroopers. Rations consisted of rice and dried fish.

Naval Parachute Operation

The only operation in which the Japanese naval paratroops have been employed was the attack on Menado airfield on the northeast tip of Celebes Island. Two battalions, known respectively as Yokosuka 1 and Yokosuka 3 Special Naval Landing Forces, had been trained for parachute

operations in the fall of 1941 at the naval air station at Tateyama. Each battalion was organized into a headquarters company, three rifle companies each of which had one machine-gun platoon, and an antitank unit. About a week before the attack on Pearl Harbor, the two battalions sailed to Takao in Formosa, whence Yokosuka 1 proceeded to Davao preparatory to its attack on Celebes.

On 11 January 1942 Nell twin-engined bombers, which had been converted to transports, flew over the Menado airfield in formations of five. The transports were preceded by bombers and escorted by Zeros. Headquarters company and two of the rifle companies jumped from altitudes of 900 to 1,000 feet. The troopers, in addition to rifles, were armed with sub-machine guns, light and heavy machine guns, and 50-mm grenade dischargers. An antitank unit also was dropped the same day, but its guns had been flown in to a lake near the airfield by seaplanes. By the time these guns were ferried ashore and brought up the battle of the airfield was over; about ten Allied tanks encountered in the operation had been destroyed by other means.

The paratroopers completed investment of the airfield which they held without further opposition after about 5 hours' fighting. Native defending troops fled, and the small Dutch regular force was annihilated with the exception of about 30 who were taken prisoners. The plan for the attack was predicated on the coordination of the paratrooper attack with landings from the sea, but the airborne attack succeeded so quickly that this proved unnecessary.

On 12 January the third rifle company was dropped from another wave of planes, and these troops joined those of the other two companies in taking up guard duties around the captured airfield. They remained at the field until 24 April when the unit was divided into small detachments to take other islands. During the latter operations chutes were left in storage, and the troops were landed from surface craft. By November 1942 Yokosuka 1 left Macassar where it was assembled for transport to Japan. Its strength was heavily depleted by malaria and other endemic diseases. Yokosuka 3 also returned to Japan about this time, with its personnel much depressed because they had not been used for paratroop operations for which they had been trained.

Hunan Operations

At 1600 on 21 November 1943 Japanese paratroopers attacked Taoyuan, Hunan, as a phase of their Tungting Lake campaign. Extensive reconnaissance of the area of operations was carried out prior to the paratroop attack, and just before the appearance of the troop-carrying planes the objective was subjected to a heavy and sustained strafing.

Equipment was dropped first as 16 planes flew over the drop area. Low-flying bombers then heavily bombed and strafed Chinese positions, while about 60 paratroopers bailed out from what appears to have been a considerably higher altitude than prescribed. All the troopers landed close to their objective; the leader was nearer than any other of the group. As soon as he had landed, he fired a flare apparently intended as a signal for fifth columnists in the city to join the attack.

The paratroopers collected their equipment and assembled in about half an hour. No casualties were inflicted on the paratroopers by the Chinese defenders, yet no attempt was made to develop the paratroop attack, leading to the conclusion by observers that it was intended primarily as a training exercise.

On 6 August 1944, Japanese parachutists were dropped from transports over the Hunan area. They were in plain clothes, but wore badges consisting of a white sun on a blue background with characters reading "Peace and National Reconstruction Army." They were equipped with small arms and carried a sum estimated to be equivalent to \$200,000 to \$300,000 to be used for bribing the local populace, especially officials. They could speak several Chinese dialects. Each man carried a small bamboo box containing emergency rations.

Interim Operations

Japanese transports of the type hitherto used in paratroop operations were observed from time to time during the course of the New Guinea campaign, but it is generally believed that no airborne operations were intended, and the planes had been assigned other missions. No Japanese airborne troops were reported in action again until 26 November 1944.

On this date a small operation occurred on Leyte. A Japanese convoy was scheduled to enter Ormoc Bay on 28 November, and the airborne troops apparently were expected to carry out demolitions sufficiently extensive to prevent American planes based on Leyte from striking at the ships. Around midnight of 26 November three transports flew over Leyte. One fell a victim to American antiaircraft fire near San Pablo airfield, and all personnel were killed. Another crash-landed south of Dulag, and 15 lightly armed soldiers scattered throughout this area without attempting to perform any mission. The third plane crash-landed in the water off Dulag; two of its 16 occupants were killed that night by American ground forces and the others ultimately were hunted down. No paratroopers were dropped during this abortive attack, although it is possible that succeeding waves of transports would have flown some over the area had the venture met with even partial success.

Leyte Operations (6 December 1944)

The most recent employment of Japanese paratroopers also occurred on Leyte, where they were assigned missions that would have had important implications had the attack succeeded. American planes based on Leyte were interfering seriously with Japanese aerial operations from their fields on Luzon. Of greater immediate significance were the shattering attacks by planes from the Leyte airfields on Japanese convoys attempting to land reinforcements and supplies in the Ormoc area.

The Japanese accordingly determined to regain the Buri, San Pablo and Bayug airstrips, while secondary attacks were delivered on Dulag and Tacloban to paralyze American air operations from those strips. Aside from the primary objective of gaining possession of the most important Leyte airstrips, the paratroop operation, timed for 6 December 1944, was designed to destroy or cripple so many American planes that no serious air opposition could be interposed to the landing of reinforcements in Ormoc Bay from a convoy due to arrive on 7 December. The importance of striking a major blow on the anniversary of Pearl Harbor was not overlooked, but this apparently was an accidental circumstance, for the timing of the attack doubtlessly was governed by the desire to synchronize the operation with the arrival of the convoy.

Two separate, but nonetheless highly coordinated, operations were planned. The major effort was to be made against the Buri, San Pablo, and Bayug airstrips. These were to be seized with the aid of ground troops expected to break through from the west to synchronize their climactic assault with the airborne attack. Smaller groups of paratroopers were sent against the Dulag and Tacloban strips in what must have been regarded as suicide missions. Troopers who took part in this secondary attack were ordered to destroy as many American planes as possible and to hold the strips at least until midnight of 7 December.

The first echelon of 30 Topsy twin-engine transports, in three formations, was to take on 409 paratroopers at the Angeles field on Luzon.¹ These planes were to take off at 1530 and be over their targets by 1840, 6 December. The transports were to rendezvous in the air, and as they approached the San Pablo field they were to form into three formations of 11, 9, and 10 planes respectively.

The 11- and 9-plane formations were assigned the mission of attacking the northern side of the San Pablo field. The 10-plane formation, assigned to attack the eastern and southern parts of the San Pablo field, was to split into 4- and 6-plane groups. The transports were provided with an escort of Oscar fighters, and Tony and Frank fighters were committed for the temporary neutralization of the American fields to prevent air interference

¹ Another less reliable source gives the number of transports in the first echelon as 39, loading 463 paratroopers.

with the paratroop operation. Medium bombers were assigned to bomb and strafe the Buri and Bayug fields just before the paratroopers were dropped, while other bombers were ordered to attack antiaircraft installations on the San Pablo field.

Almost all transports of the first echelon were to drop their combat personnel over the Buri, San Pablo, and Bayug strips. Two planes each were to carry the troopers assigned to the subsidiary attack on the Tacloban and Dulag fields. The first echelon combat personnel comprised 25 headquarters officers and enlisted men, two companies of 100 and 98 men respectively, a work (engineer) company of 97, three special platoons, and a signal unit of seven men. Fourteen men of the second company's 98 were attached to the work company.

Two follow-up waves over the area of the major attack were planned, one 5 hours after the initial attack with 270 men in 21 planes, and the second at H plus 12 hours by 80 men. The second wave was to carry the main strength of the third company, the heavy-weapons company, and additional headquarters and signal personnel, while the final wave was to carry the remnants of the total force. These reinforcement waves were ordered to help in the final mopping up of surviving elements of resistance, after which a defense of the seized airfield was to be organized. Transports used in the first wave apparently were to fly to the Yamashiro field to pick up the personnel of the second and third echelons, but so many planes were shot down in the initial attack that dispatch of the ensuing waves was precluded.

The transports of the first echelon arrived over the major objectives about 15 minutes later than the orders directed. Eighteen planes, out of an estimated total of 51 transports and bombers, were shot down, but nevertheless between 200 and 300 paratroopers were dropped after preparatory bombing and laying of a smoke screen. About 20 plane-loads of troopers were dropped in the vicinity of the San Pablo and Buri fields, but unfortunately for the Japanese these fields were not operational at the time, and there was little opportunity for destruction. As the paratroopers descended they sang and called out phrases in English such as "Kill a Yankee!"; "Go to Hell, Beast!"; "Have done, all the resistance"; "Lay down arms, surrender quickly; if don't shall die!"; "It is resistless, so that get away from here in this night; do what I say, must help your life. If don't shall die all these captives!"

Harmonicas, jewsharps, and other instruments were played as signals by the paratroopers immediately after landing. For liaison purposes headquarters was identified by the sound of a harmonica. The 1st Company had a pigeon whistle as its identification medium, while the 2d and 3d Companies were identified respectively by the sounds of wooden clappers and flutes. The work company was identified by a "flute with a bass sound," while the striking of a gong distinguished the heavy-weapons company.

Two or three L-5's were burned on the seized fields, but others were left intact. The Japanese ran about firing into washbowls and other non-military objectives, while gasoline supplies and ammunition dumps were left untouched. To be sure, a jeep was burned, and a truck upset, but no important demolitions were executed. Elements of a Japanese infantry division had begun an attack on the field from the west the day before, but their premature attack had been frustrated before the paratroop assault, and only scattered remnants of the force eventually succeeded in joining the paratroopers.

The next day, 7 December, the paratroopers, driven off the San Pablo field, retreated to a pocket of resistance near the Buri airstrip where they held out for several days, along with a few survivors of the infantry division. A battalion of another division launched an attack to reinforce the airborne forces, apparently in accordance with the master plan, but the paratroopers already had been liquidated to all intents and purposes before this abortive maneuver was begun.

Meanwhile the secondary attacks on the Dulag and Tacloban strips completely miscarried. Two transports flew over the former installation; one dropped about five paratroopers and then crashed, while the other crashed about 4,500 yards northeast of the field. Over Tacloban two medium bombers converted to transports lowered their flaps and wheels preparatory to landing, but one was shot down, and the other crashed. Follow-up drops, at least over Dulag, must have been planned, for a captured order designated missions for three platoons, personnel of which were to rendezvous at two assembly points after landing. In addition to destroying aircraft and liquidating defending personnel, one platoon was ordered to destroy Nanuki bridge and thus halt any American advance from the south. Signal and radio units were ordered to set up communications facilities in the assembly area where the commanding officer was to set up his command post. Only the preliminary phases of this ambitious plan were attempted, however, in view of the losses sustained by the first echelon.

By 12 December, 6 days after the beginning of the attack, all paratroopers had been liquidated. Of 215 Japanese dead around Buri, about one-third were paratroopers, while 125 paratroopers were found at San Pablo. It was first thought that the paratroopers were a loosely organized group of picked fanatics who had had little or no special training for an airborne operation. It was later learned, however, that they belonged to a well-organized and trained raiding regiment and had rehearsed the Leyte operation in considerable detail. The aircraft came from a raiding flying regiment which, like the airborne troops, was based on Luzon.

The attack was a complete failure, for a Japanese convoy attempting to put into Ormoc Bay was smashed by planes from Tacloban on 7 December, while American amphibious forces landed on the very beach which the Japanese had selected for this disembarkation.

Chapter IV

Planes and Parachutes

Planes

The Japanese have a variety of planes suitable for paratroop activity, both transports and medium bombers. The model so far primarily relied on as a troop carrier is the transport Topsy, although models of the DC-2, the DC-3, and the Lockheed "Lodestar" also are available. For cargo carrying and glider tow the Sally, a medium bomber, has been used.

The performance data given below for Topsy and Sally are from Japanese sources; for the other planes the figures are estimates based upon their American equivalents or drawn from performance figures for Japanese medium bombers. It is evident that the Topsy and Sally models already used in all likelihood will be encountered in such subsequent Japanese paratroop operations as may occur. Since the other planes also are available, however, their capabilities are given. Conversion of any medium bombers to carry troops is considered unlikely in view of the alterations required, but any of them can and may be used to carry cargo in paratroop attacks.

Topsy

One of the most extensively used transports is Topsy, a two-engine, low-wing monoplane identified by the Japanese as the Army Type 100 transport plane, Model 1. It is 52 feet, 10 inches long and has a wing span of 74 feet. It is powered by two Mitsubishi Type 1, 14-cylinder air-cooled radial engines each rated at 1,050 horsepower. Empty, the plane weighs 13,078 pounds; this weight includes the 660-pound estimated aggregate weight of the four crew members. Fully loaded weights given in the table below do not include the weight of ballast. In airborne attacks, this plane normally flies at 9,000 to 15,000 feet; jumps from it ordinarily are made from an altitude of about 600 feet. Service ceiling of the plane with a normal load is 23,000 feet; it will climb to 20,000 feet in 18.6 minutes.

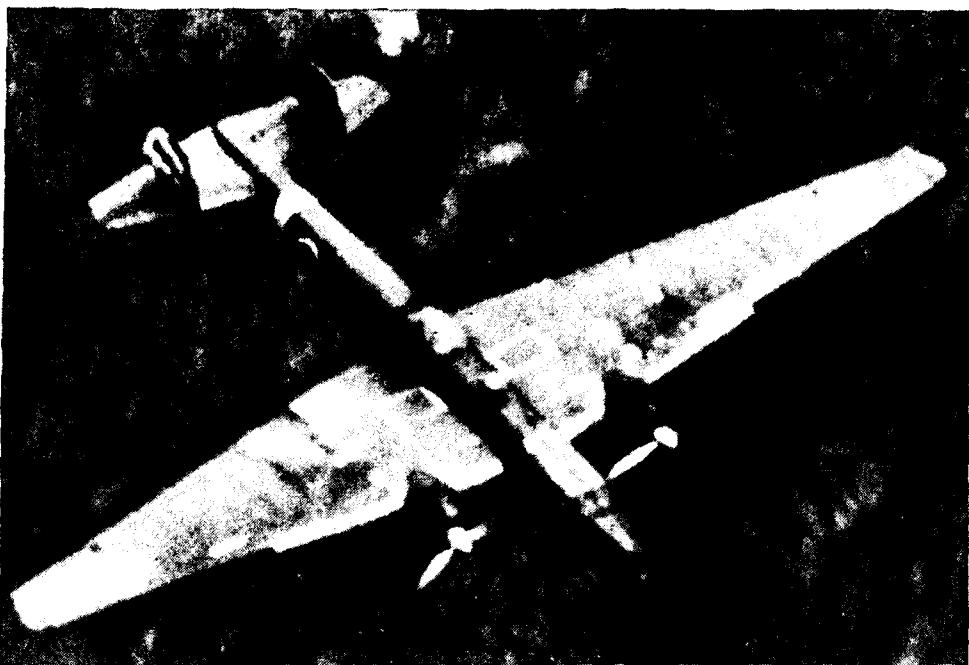


Figure 16.—Nell—twin-engine, mid-wing bomber can be converted by the Japanese for use in airborne operations. As a cargo carrier it is estimated it could carry a load of 2,200 pounds 2,200 miles.

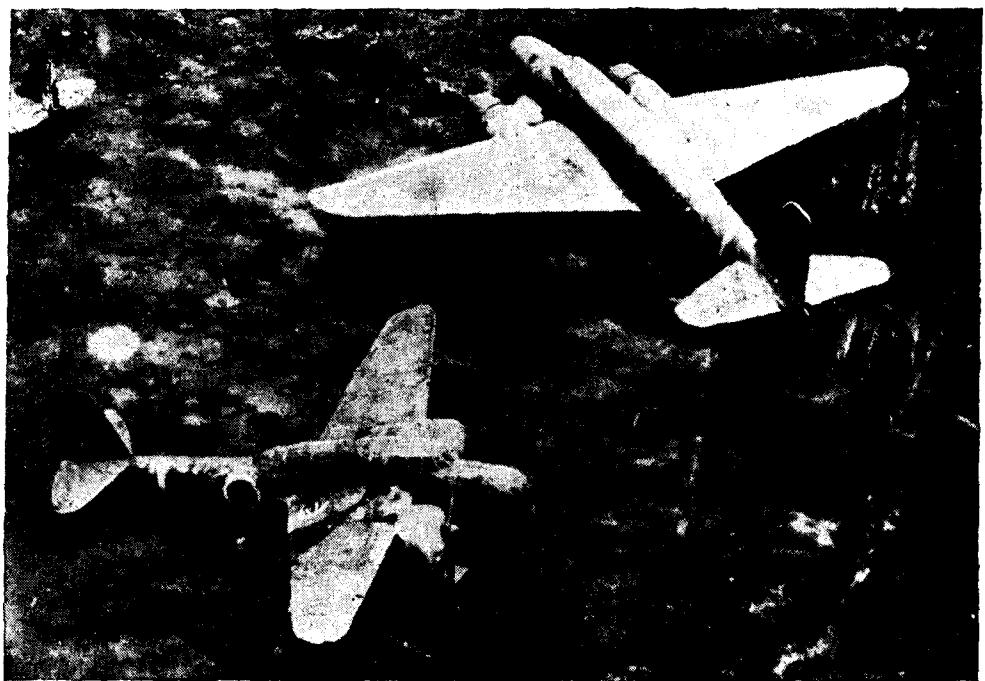


Figure 17.—Topsy—twin-engine transport plane in the background is the plane so far relied on by the Japanese in airborne operations. It has a carrying capacity of 10 men, 944 miles.

OTHER CHARACTERISTICS OF TOPSY

Number of men and weight	Weight fully loaded (pounds)	Fuel ¹ (pounds)	Fuel (gallons)	Lubricants (pounds)	Lubricants (gallons)
17 men, 3,740 pounds	18,965	1,918	314	221	26
13 men, 2,860 pounds	18,988	2,778	475	265	32
10 men, 2,200 pounds	18,877	3,330	545	265	32
5 men, 1,100 pounds	19,050	4,542	745	331	40

Number of men and weight	Sustained flight (hours- minutes)	Spare ² time (hours)	Flight Radius (hours- minutes)	Flight radius (miles)	Air speed (mph)
17 men, 3,740 pounds	4 h 14 m (4 h 33 m)	2	2 h 14 m (2 h 33 m)	200 (230)	174 (161)
13 men, 2,860 pounds	6 h 30 m (6 h 54 m)	2	4 h 30 m (4 h 54 m)	426 (426)	174 (161)
10 men, 2,200 pounds	7 h 21 m (7 h 55 m)	2	5 h 21 m (5 h 21 m)	472 (522)	174 (161)
5 men, 1,100 pounds	10 h 05 m (10 h 50 m)	2	8 h 05 m (8 h 50 m)	710 (775)	174 (161)

¹ Fuel consumption is computed at 74 gallons an hour. Figures in parentheses are based on 69 gallons an hour.

² Two hours of "spare time" were employed in trial maneuvers to allow for taxiing, assuming formation, navigational error, and margin of safety.

Sally

The medium bomber known to Allied forces as Sally, is designated by the Japanese as the Army Type 97 bomber, Model 2. A low mid-wing monoplane, it has an over-all length of 52 feet and a wing span of 66 feet, 7 inches. It is powered by two Mitsubishi Type 100 14-cylinder, air-cooled, radial engines each rated at 1,460 horsepower. Weight of the plane empty, according to the Japanese, is 13,200 pounds; this weight includes 995 pounds for the crew of six. Service ceiling with a normal load is 29,900 feet; rate of climb is 20,000 feet in 12 minutes.

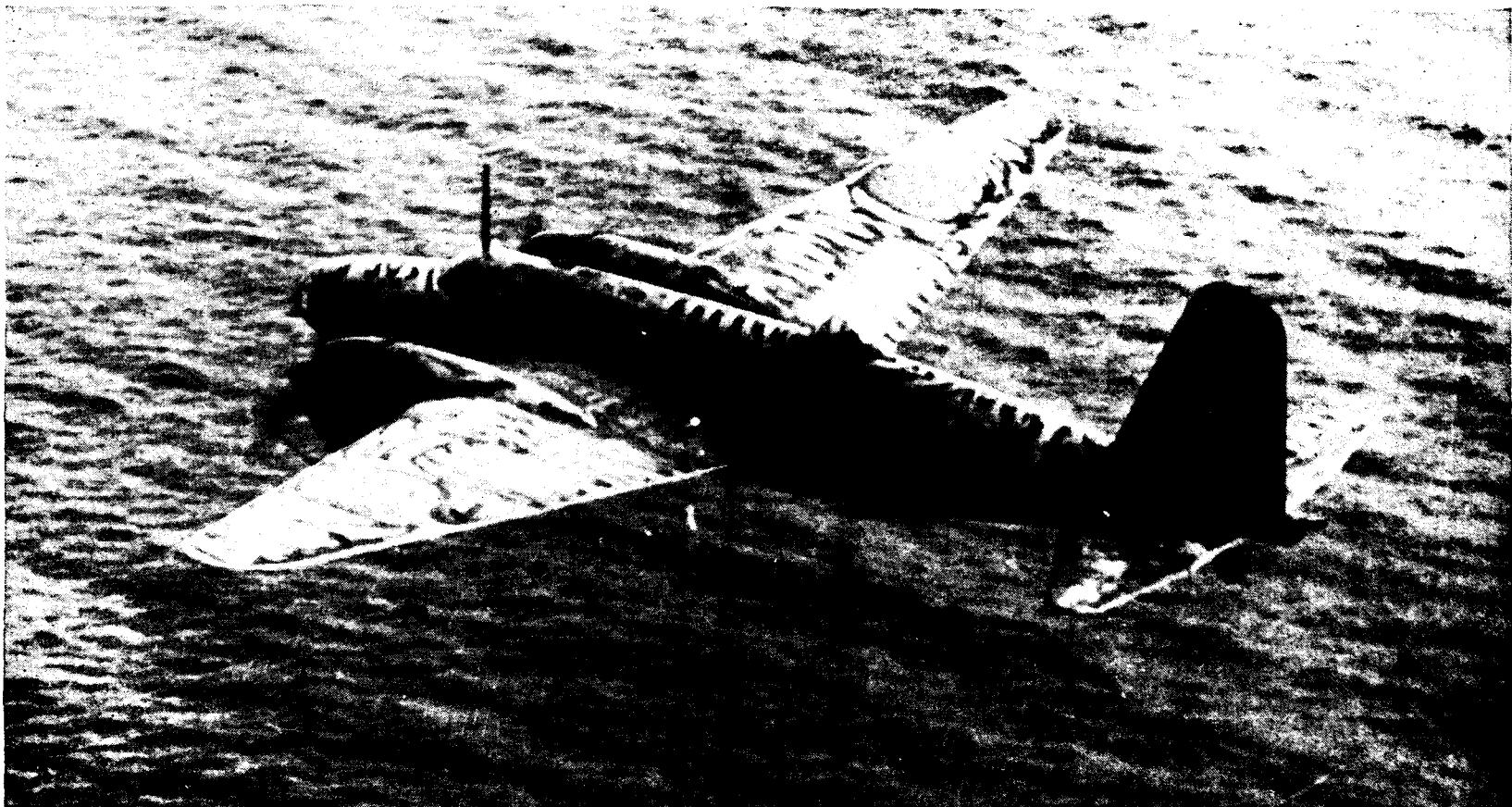


Figure 18.—Sally—twin-engine bomber. The Sally has been employed by the Japanese as a cargo carrier and as a glider tow. According to Japanese estimates, its range as a cargo carrier is 870 miles carrying a load of 1,760 pounds.

OTHER CHARACTERISTICS OF SALLY

Cargo (pounds)	Weight fully loaded (pounds)	Fuel ¹ (gallons)	Fuel (pounds)	Lubricants (pounds)	Lubricants (gallons)
1,760	20,870	445	3,100	330	40
880	20,900	575	3,980	330	40

Cargo (pounds)	Sustained flight (hours- minutes)	Spare ² time (hours)	Flight radius (hours- minutes)	Flight radius (miles)	Air speed (mph)
1,760	7h 3m	2	5h 3m	435	180 (160)
880	9h 7m	2	7h 17m	620	180 (160)

¹ Fuel consumption 75 gallons per hour.

² Two hours' "spare time" allowed for taxiing, assuming formation, navigational error, and margin of safety.

Other Planes

Significant performance figures for other transports and bombers which may be used in paratroop operations are:

TRANSPORTS

Allied designation	Jap designation	Number of engines	Wing type	Number of paratroops	Range (miles)	Air speed (mph)
Tabby (Jap version of Douglas DC-3).	Type O transport plane Model 22.	2	Low-wing monoplane.	28	1,500	160
Tess (Jap version of Douglas DC-2).	Type O transport plane Model 11.	2	Low-wing monoplane.	22	1,100	160
Thelma	Type O transport plane Model 1.	2	Low-mid-wing monoplane.	16	970	185

MEDIUM BOMBERS

Allied designation	Jap designation	Number of engines	Wing type	Load (pounds)	Range (miles)	Air speed (mph)
Nell	Type 96, land-attack Model 23.	2	Mid-wing monoplane.	2,200	2,200	196
Betty	Type 1 bomber Model 22.	2	Mid-wing monoplane.	2,200	2,820	204

NOTE: Figures above are estimated; load is based on normal bomb capacity or freight load; range is based on normal ranges, and air speed on cruising speed; the efficient level for cruising speed in all cases falls within the pattern for paratroop attack set up by the Japanese.

Loading Plans

The Japanese estimate that the gross weight of a paratrooper, fully loaded and ready to jump, will range from 220 to 240 pounds. They are aware of the coordination which is necessary between the jumping paratrooper and the dropping of essentials such as heavy weapons, signal equipment, and ammunition, which are not carried on his person. In this respect they have three alternative procedures that can be utilized:

To load each unit's bulk essentials in the planes of each unit's aerial formation and to drop them either before or after the paratroopers jump.

To drop the bulk essentials and personnel at the same time but from different plane formations.

To have the plane formation carrying bulk essentials follow the formation carrying paratroopers and to drop the bulk essentials directly above the paratroopers.

The Japanese doctrine, therefore, is flexible; the governing principle will depend upon the mission, the enemy situation, and the terrain.

Parachutes

Available evidence indicates that Japanese trials with paratroop parachutes may have commenced as late as January 1941. They were conducted on a small scale (whether by Army, Navy, or jointly is not known) with primitive equipment, and resulted in the rejection of pilot (rip-cord-

operated) and two-suspension chutes. Among the specifications adopted for paratroop chutes were:

1. Chute should be back-pack, automatically operated.
2. Harness and chute should be one-point connection type.
3. Rate of descent should be 5.2 meters (17 feet) per second for a 7.5 kilogram (16.5 pounds) parachutist.
4. On a static line 5 meters (16.4 feet) long, the chute should open within 4 seconds.

By the end of 1941, various chutes had been tried. Type 89 (1929) Model 3, modified for automatic (static line) operation, with an emergency chute in a chest pack, was unsatisfactory, primarily because the emergency chute struck the chin of the wearer upon landing. Special Type 97 (1937) Model 2 employed two-point suspension, and oscillated dangerously during the descent which was made at excessive speed. This resulted in a recommendation against chutes of this type. Apparently a more successful chute, Type 1 (1941) Modification 1, was developed.

Currently in use by paratroops, it is believed, are Type 3 (1943) Model 2, worn by parachutists taking part in the Leyte operation in December, 1944, and Type 1 (1941) Model 2.

A back-pack, troop (static-line operated) parachute, believed to be Type 3 (1943) Model 2, was captured early in 1944. The workmanship and material of this parachute are very good, but the design is considered below American standards. This troop parachute consists of a 28-foot main canopy, worn on the back, and a 24-foot reserve canopy, worn on the chest. The main canopy, 28 feet in diameter, has 24 panels and suspension lines. The reserve canopy, approximately 24 feet in diameter, has 20 panels and suspension lines, and a vent similar to that in the main canopy. The panels of the main chute are not straight-sided, but are so shaped as to produce a cambered-shaped parachute, which approaches the hemispherical when inflated. The Japanese claim that this shape not only reduces oscillation during descent, but is more efficient aerodynamically than conventional chutes. At the top of the canopy is a vent 30 inches in diameter, which is restricted by two heavy elastic rings to a diameter of approximately 8 inches.

The harness is made of single-thickness, silk webbing of a tensile strength of approximately 2,900 to 3,000 pounds, dyed dark green. Well-fitting, the harness holds the wearer securely. The hardware, small and light, is easily adjusted on the thin silk webbing. It is chromium-plated throughout. A quick-release device is incorporated, which, however, is not considered positive in operation. Rings are provided near the seat sling for attaching battle equipment, a life raft, or food kit. High on the harness risers are D rings for attaching the reserve chute.

The main pack, worn on the back, is closed at a single point and locked over a figure-8-shaped metal fitting. The pack is a very bulky bundle.

The reserve pack is closed at two points by figure-8 fittings, and carries a roll-type pilot parachute flap which is used in combination with a spring-less-type pilot parachute.

The main parachute and harness weigh 20.8 pounds without static line. The reserve parachute weighs 10 pounds.

The static line is reported to be in two parts. The lower part, pure white silk about 40 cm (15.7 inches) long, and 75 mm (2.95 inches) in circumference, with a loop at the top, is attached to the chute peak. The upper part, 25 or 26 meters (82 to 85 feet) long and 75 mm in circumference, with a steel snap at the top and a loop at the bottom, is attached to the anchor cable. The two parts of the static line are bound together at the loops in two places with red silk thread.

When the static line is drawn taut by the jump, a steel pin, about 12 cm long and 1 cm in diameter, is automatically drawn from eyelets in the flaps of the parachute pack, releasing the chute.

According to a parachutist captured on Saipan in July, 1944, his unit wore the newly adopted Type 1, Model 2 parachute, which had replaced Type 3. Specifications of this parachute, however, are not known.

Chapter V

Japanese Paratroopers' Weapons

Introduction

Japanese paratroopers' weapons may be divided into two classes: those carried by jumping personnel, and those dropped separately by parachute. Except for minor items, it is believed that Army and Navy paratroopers will carry similar weapons and equipment.

Weapons carried during the descent include the following: pistols; rifles and bayonets; submachine guns; light machine guns; grenade dischargers; rifle grenades and launchers; hand grenades; antitank grenades; flame throwers.

While the equipment carried by each paratrooper will vary according to the mission, it is believed that the rifleman carries a rifle complete with bayonet and 120 rounds of ammunition, three hand grenades, a smoke candle (probably self-projecting or hand thrown), binoculars, small pickax, shovel, and a luminous compass.

The light-machine-gun operator carries a light machine gun, with two full magazines, bayonet, and cleaning and preserving material, and two hand grenades. The assistant light-machine-gun operator carries a pistol, 27 rounds of pistol ammunition, 180 rounds of light-machine-gun ammunition, a magazine loader, and three hand grenades.

The grenade-discharger operator, with pistol and 27 rounds of ammunition, carries the discharger, six shells, and two hand grenades.

This equipment is subject to considerable variation depending on the assigned mission. Two days' rations, some medical supplies, and a luminous compass are normally carried by everyone. Standard demolition charges may be carried.

Signal equipment will include portable receivers and transmitters, probably constructed as transceiver units; several different types of this radio equipment have been recovered.

Pistols

The Type 14 (1925) and the Type 94 (1934) 8-mm pistols are usual paratroop sidearms. They are semiautomatic, recoil-operated pistols and fire interchangeable, rimless, ball ammunition. Type 94 (1934), though a later model, is believed inferior because of poor design and workmanship.

It has been reported that some paratroopers have carried .25-caliber automatic pistols, apparently for suicide, but these are not believed to be issue weapons.

Characteristics:

	<i>Type 14 (1925) 8-mm Pistol</i>	<i>Type 94 (1934) 8-mm Pistol</i>
Caliber	8 mm (0.315 inch)	8 mm (0.315 inch).
Barrel length	4.5 inches (incl. chamber)	3.8 inches (incl. chamber).
Weight firing	2.06 pounds (with empty magazine)	1.69 pounds (with empty magazine).
Muzzle velocity ..	1,000 feet per second approximately	900 feet per second.
Effective range ...	50 yards	50 yards.
Ammunition	8-mm rimless ball	8-mm rimless ball.
Projectile weight .	0.23 ounce	0.23 ounce.
Feed	8-round magazine	6-round magazine.

Rifles

Type 99 (1939) and Type 2 (1942) 7.7-mm take-down rifles are designed for paratroop use. Both are modifications of the standard Type 99 (1939) 7.7-mm rifle, and have the same performance.

The barrel of Type 99 (1939) is joined to the receiver by an interrupted thread, and is easily detachable. A spring-loaded plunger locks barrel and receiver together for firing. The bolt handle is removable.

Characteristics:

Caliber	7.7 mm (0.303 inch).
Length	44 inches.
Barrel length	25.75 inches.
Weight	8.6 pounds.
Muzzle velocity	2,390 feet per second (Type 99 ball).
Ammunition	Rimless; ball, AP, incendiary, tracer.
Sights	Rear sight graduated from 300 to 1,500 meters (330 to 1,635 yards).



Figure 19.—Principal equipment carried by paratroop rifleman. (Type 99 (1939) 7.7-mm take-down rifle, assembled, left, and taken down, right, with bayonet, belt with frog, and bandolier).

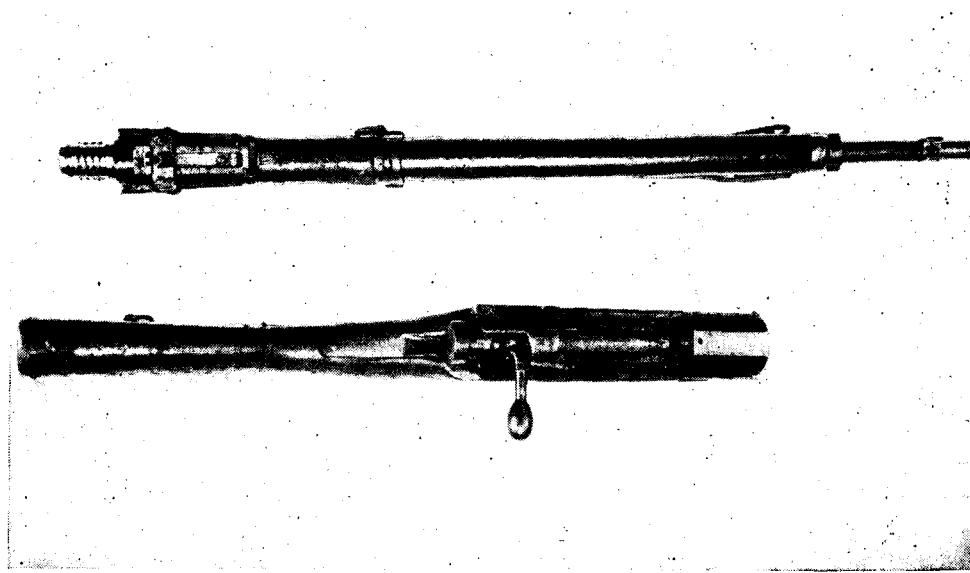


Figure 20.—Type 99 (1939) 7.7-mm take-down rifle.

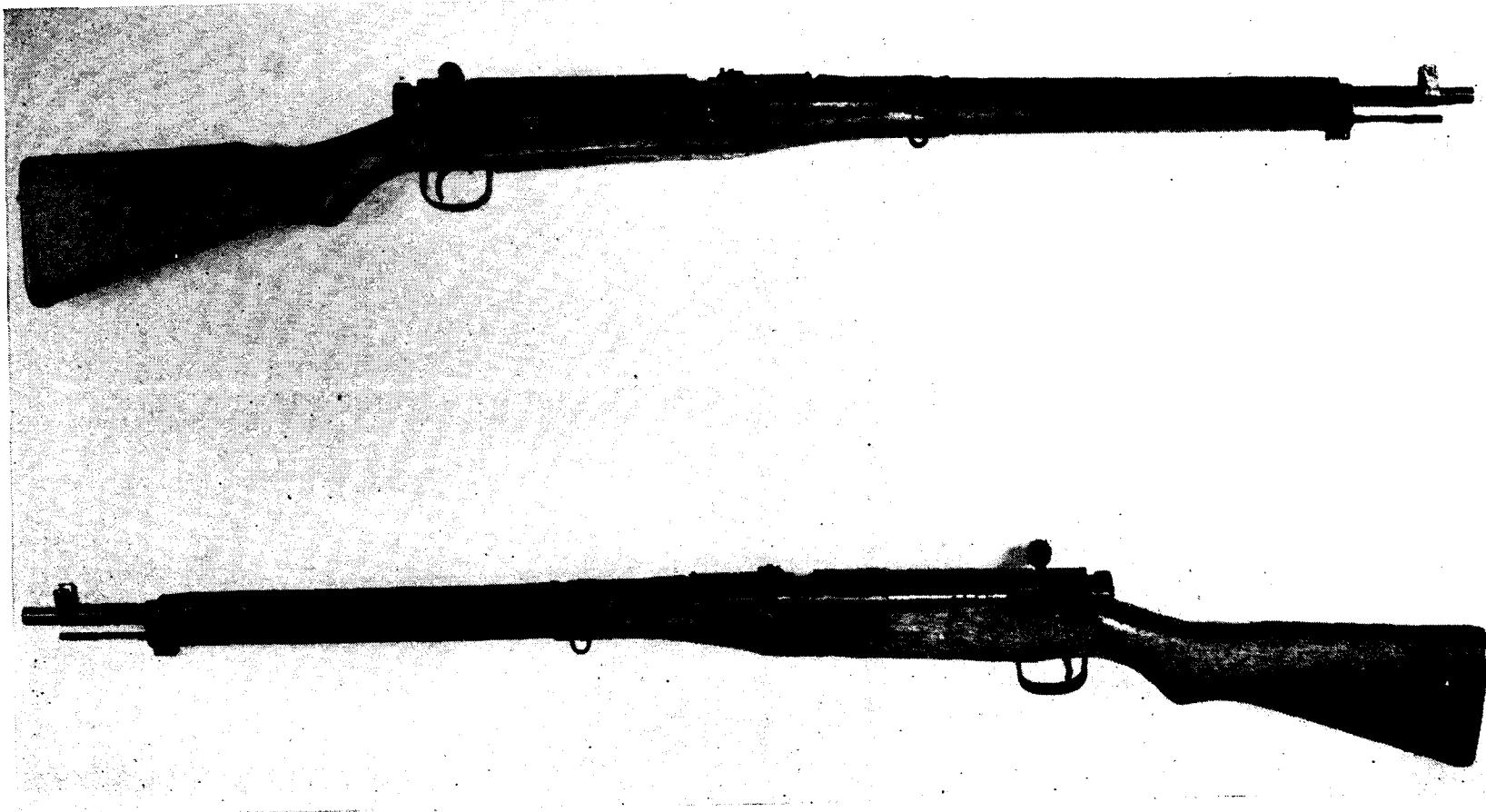


Figure 21.—Type 99 (1939) 7.7-mm take-down rifle, right and left side views.

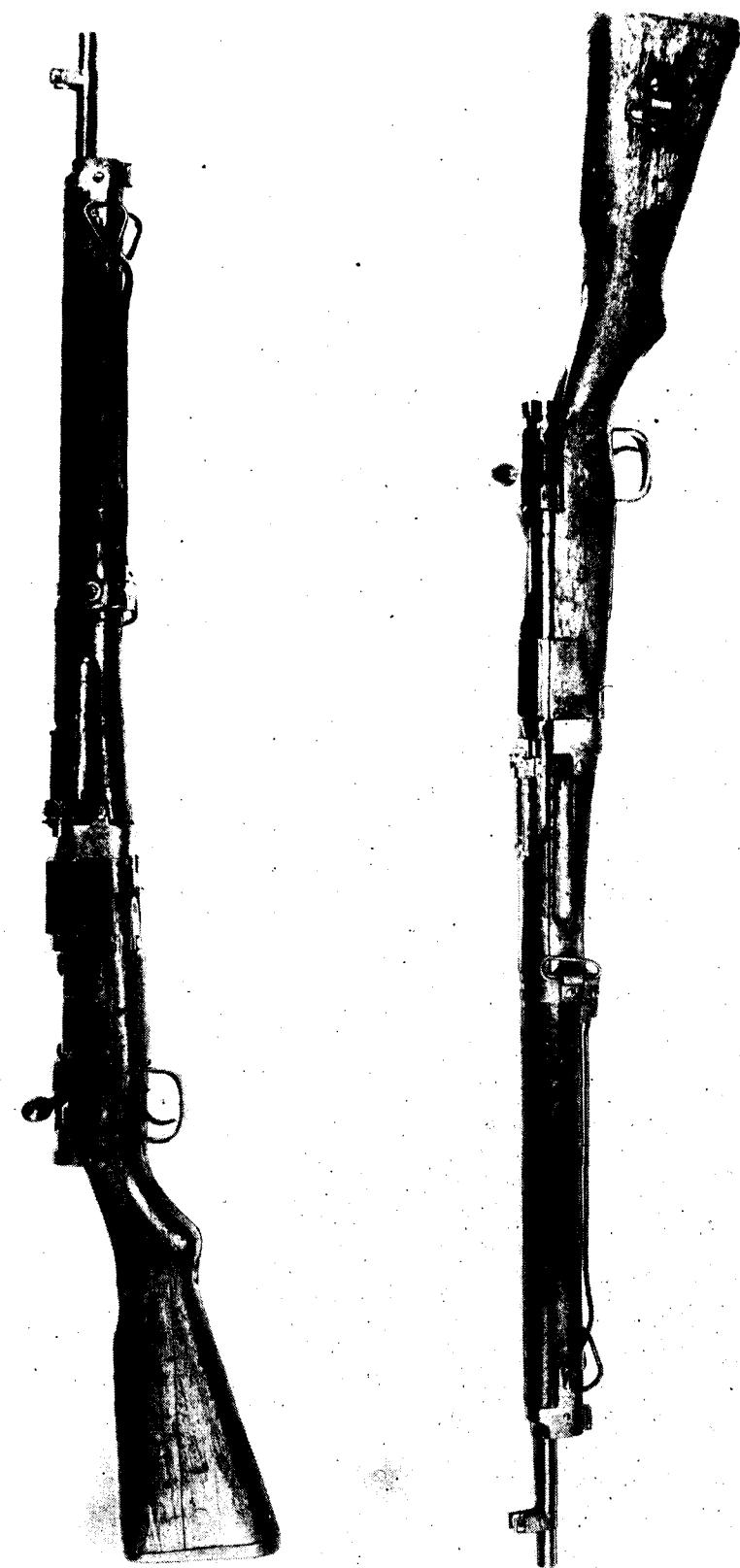


Figure 22.—Type 2 (1942) 7.7-mm take-down rifle, right and left side views.

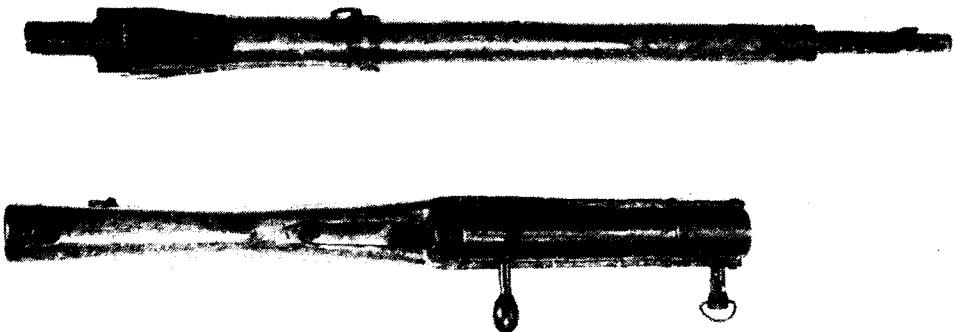


Figure 23.—Type 2 (1942) 7.7-mm take-down rifle.

The Type 2 is the standard paratroop rifle. Although take-down rifles are inherently weak, design and good workmanship make this weapon one of the strongest of its type. The barrel-receiver joint, consisting of a heavy locking lug and cross-key, represents considerable improvement over the method employed in the Type 99. The monopod has been omitted from this rifle, and the bolt handle is not detachable.

Characteristics:

Caliber	7.7 mm (0.303 inch).
Length	44 inches.
Barrel length	25.75 inches.
Weight	9 pounds.
Muzzle velocity	2,390 feet per second (Type 99 ball).
Ammunition	Rimless; ball, AP, incendiary, tracer.
Sights	Rear sight graduated from 300 to 1,500 meters (330 to 1,635 yards).

Submachine Guns

The first submachine guns known to be used by the Japanese were of Solothurn and Bergmann designs, and were manufactured in Germany. The Japanese also are known to have used Thompson submachine guns captured from the Chinese. The present standard submachine gun, however, was designed and is manufactured in Japan. It is the Type 100 (1940) 8-mm submachine gun, of which at least two versions exist.

Both versions of Type 100 (1940) 8-mm submachine gun are straight blowback-operated, and, according to Japanese sources, fire standard 8-mm pistol ammunition. However, a recent test firing, using 8-mm pistol ammunition, proved unsuccessful. It is not known whether incorrect 8-mm ammunition was used, or whether the weapon itself was defective.

The weapons are fed from curved, box-type magazines mounted on the left. The ejection port is on the right.



Figure 24.—Type 100 (1940) 8-mm submachine gun (early model), left, taken down and right, assembled with carrying pack and accessories.



Figure 25.—Type 100 (1940) 8-mm submachine gun (early model), right and left side views.

Differences between the two versions are as follows:

	<i>Early Model</i>	<i>Late Model</i>
Stock	Hinged, folds to the right.	Detachable.
Type of sight ..	Blade-type front sight, with guard; ramp-type rear sight.	Blade-type adjustable front sight without guards; fixed aperture and open V rear sight.
Bayonet	Mounted on bar under barrel jacket.	Mounted directly on barrel jacket.

Characteristics:

	<i>Early Model</i>	<i>Late Model</i>
Caliber	8 mm (0.315 inch)	8 mm (0.315 inch).
Length over-all .	34 inches	36 inches.
Barrel length ...	9 inches	9.188 inches.
Maximum length, folded or taken down	22.25 inches	26.5 inches
Weight firing ..	9.48 pounds (with empty magazine)	9.12 pounds (with empty magazine).
Muzzle velocity	1,100 feet per second	1,100 feet per second.
Rate of fire	750 rounds per minute	750 rounds per minute.

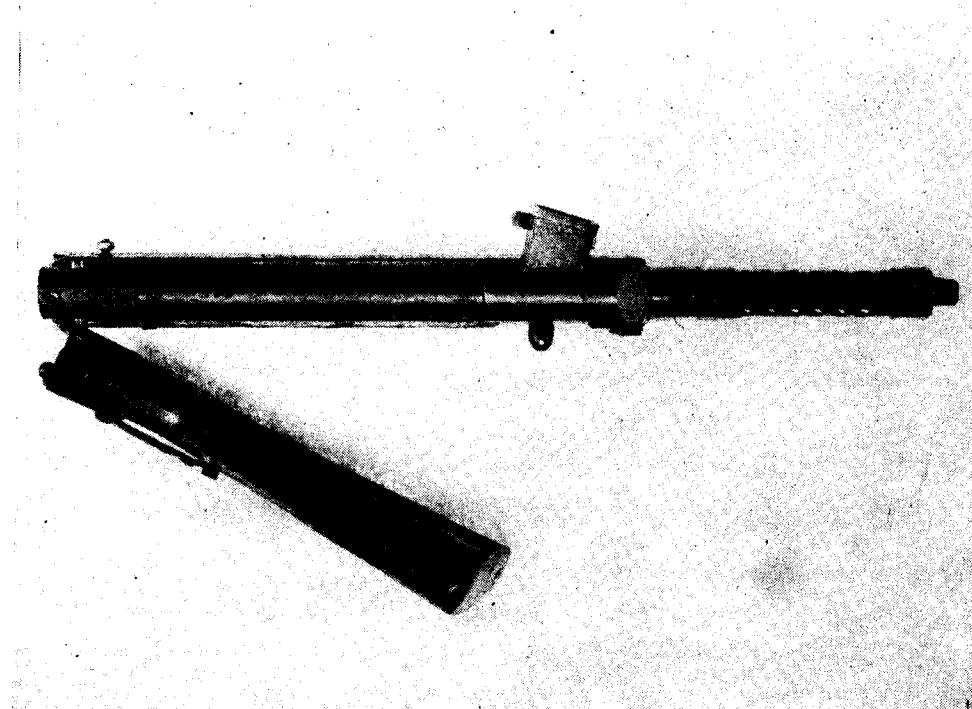


Figure 26.—Type 100 (1940) 8-mm submachine gun (early model).

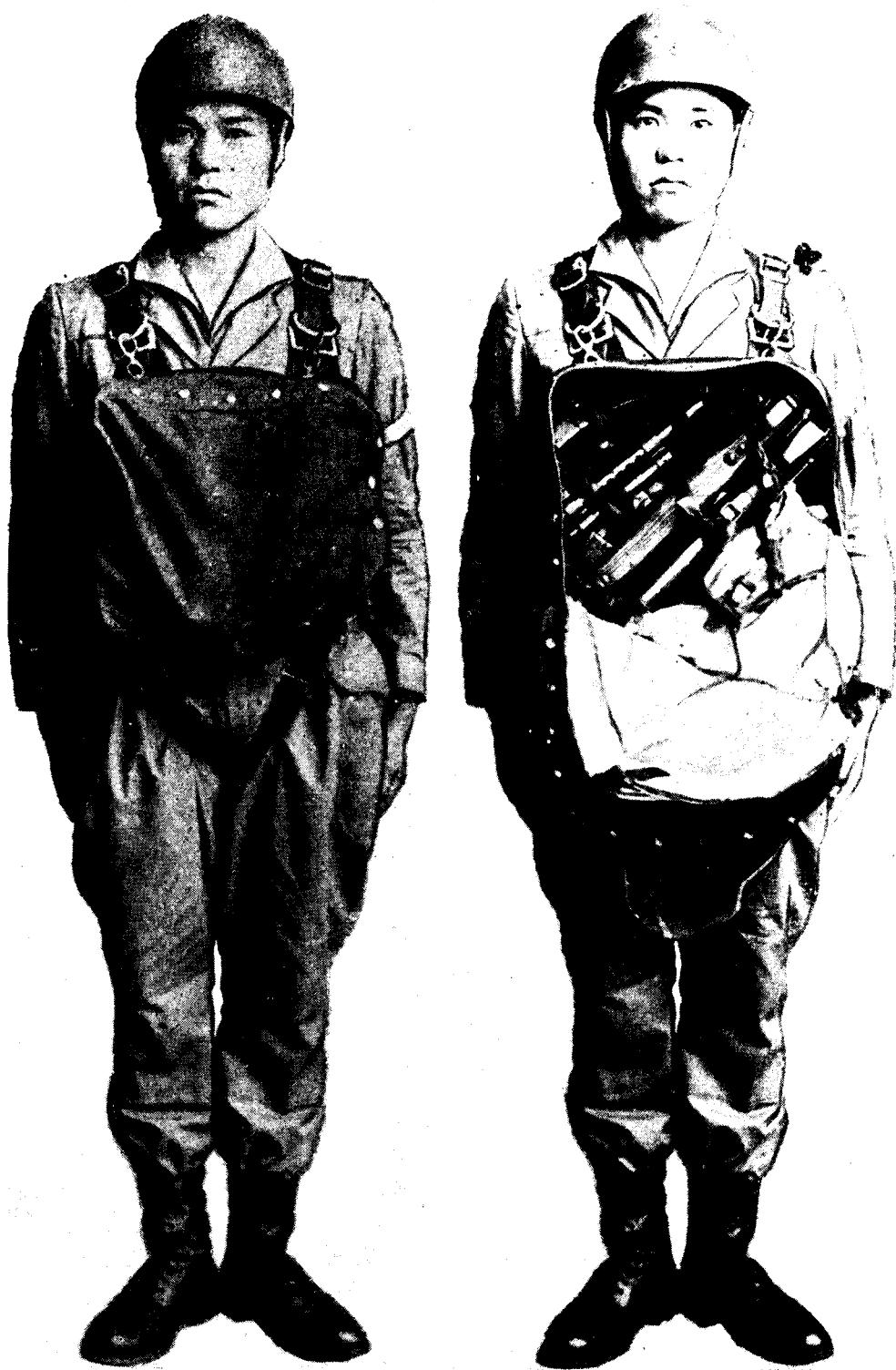


Figure 27.—Type 100 (1940) 8-mm submachine gun (early model) in chest pack.



Figure 28.—Type 99 (1939) 7.7-mm light machine gun (paratroop version).

Light Machine Guns

Although the standard Type 99 (1939) 7.7-mm light machine gun may be carried by paratroopers, a new, specially modified version has been developed for this purpose.

To adapt the standard light machine gun for paratroop use, a new type trigger group and shoulder stock assembly have been developed to fit any Type 99 (1939) 7.7-mm light machine gun. The new stock is detachable, and the pistol grip, steel instead of wood, can be folded around the trigger guard for protection as well as compactness. Also a quick-change gas piston is fitted to provide a remedy for the excessive carbonization occurring under severe climatic conditions. This modified Type 99 light machine gun may be considered a most effective paratroop weapon.

Characteristics:

Caliber	7.7 mm (0.315 inch).
Length over-all	46.75 inches.
Barrel length	21.75 inches.
Weight firing	25.2 pounds (with loaded magazine).
Muzzle velocity	2,345 feet per second.
Operation	Gas.
Rate of fire	540 to 550 rounds per minute (cyclic); 120 rounds per minute (effective).
Ammunition	Rimless; ball, AP, incendiary, tracer.
Sights	Graduated 200 to 1,500 meters (220 to 1,635 yards).

Rifle Grenades and Launchers

The Type 99 (1939) and Type 2 (1942) 7.7-mm rifles can be fitted with either the Type 2 (1942) cup-type launcher, or the Type 100 (1940) launcher.

The Type 2 (1942) launcher, a copy of the German rifle grenade launcher (*Schiessbecher*), is used for firing a 40-mm hollow-charge anti-tank grenade containing 3.8 ounces of TNT. This grenade will penetrate 50 mm of mild steel up to its maximum range of 150 meters (164 yards). This grenade is fired by means of a special cartridge; under no circumstances should ball ammunition be used.

The Type 100 (1940) launcher fires the Type 99 (1939) (a) hand grenade at ranges up to 100 yards. Since this launcher is designed for use with standard ball ammunition it is particularly suited for paratroopers.

Grenade Discharger

For paratroop use, the Type 89 (1929) 50-mm grenade discharger has been modified by fitting a removable base plate. Performance remains the same.



Figure 29.—Type 89 (1929) 50-mm grenade discharger, paratroop model (with detachable base plate).

Characteristics:

Caliber	50 mm (1.97 inches).
Weight	10.25 pounds.
Length over-all	26.6 inches.
Length of tube	10 inches.
Maximum range (Model 89 grenade)	711 yards (range scale and test firing).
Maximum range (Model 91 hand grenade)	175 yards (test firing).
Rate of fire	10 to 20 rounds per minute.

Antitank Grenades

For close-quarter antitank combat it is probable that paratroops will carry the Type 3 (1943) hollow-charge, conical, hand mine. Shaped like a truncated cone, 1.2 inches in diameter at the top, and with a maximum diameter of 4 inches, this grenade is fitted with an instantaneous fuze. Minimum safety throwing range is 10 yards. The filling weight is 1.32 pounds. Japanese documents claim that it is capable of penetrating 2.76 inches of armor plate.

Hand Grenades

Although paratroopers may carry any of the various model hand grenades, they probably will be armed with Type 97 (1937) or Type 99 (1939) (a) or (b) fragmentation hand grenades.

Characteristics:

	<i>Type 97 (1937)</i>	<i>Type 99 (1939) (a)</i>
Over-all length ...	3.75 inches	3.5 inches.
Diameter	1.97 inches	1.63 inches.
Weight	1 pound	10 ounces.
Fuze delay	4 to 5 seconds	4 to 5 seconds.

Flame Throwers

Two models of light, portable flame throwers are known to exist which the Japanese might issue to paratroop units. They are Type 93 (1933) and Type 100 (1940).

The Type 93 (1933) flame thrower consists of two interconnected fuel tanks, a smaller pressure tank, and hose and nozzle assembly. The fuel, thinner than sewing-machine oil, is a mixture of approximately 50 percent gasoline and 50 percent oil. The pressure tank contains nitrogen, compressed under 350 to 400 pounds per square inch. At the end of a 3-foot, wire-reinforced hose is a 4-foot nozzle. The igniter consists of a revolving cylinder, holding ten blank cartridges which are fired by action of a striker operated by turning the firing lever.

The complete flame thrower weighs 55 pounds when charged to the full capacity of 2.8 gallons (U. S.). In test firing this weapon reached a maximum range of 60 to 80 feet at 150 pounds per square inch pressure. The fuel used consisted of one-third gasoline, two-thirds light fuel oil. Duration of continuous discharge is 10 to 12 seconds.

The Type 100 (1940) is a later and modified version of the Type 93 (1933) flame thrower. Fuel tanks and rubber hose of the two models are identical, but the gun assembly (nozzle) of the Type 100 is shorter and lighter for easier handling.

Weapons Dropped

Various Japanese weapons have been designed for easy disassembly and pack transport. Suitably packaged, they are well within maximum weight limits and may be dropped successfully by parachute for reassembly on the ground. Among the most likely to be used are the following: Type 92 (1932) 7.7-mm heavy machine gun, Type 94 (1934) 37-mm gun, Type 92 (1932) 70-mm howitzer (battalion gun), Type 99 (1939) 81-mm mortar, Type 41 (1908) 75-mm infantry gun, Type 94 (1934) 75-mm mountain (pack) gun.

Chapter VI

Individual Outfitting and Rations

Clothing and Insignia

Clothing

Japanese Army parachute troops, who were engaged in the first combat operations early in 1942, wore green or dark khaki overalls. A Japanese manual for parachutists illustrates a man dressed to jump (Frontispiece). He is wearing an overall which is probably this uniform. Overall-type, it had long sleeves, long trousers, and a high neckline with front fastenings all the way up to the neck. Rubber boots and buff-colored crash helmets with ear flaps and chin straps were used.

However, another report, dated September 1941, indicates that all officers, noncommissioned officers, and privates wore flying jackets and trousers, and flying helmets with goggles. Officers carried an electric torch and a haversack with maps and writing utensils. Noncommissioned officers and privates carried a haversack with rations, a complete change of clothing, extra boots, and one mug.

An experimental Army jump suit somewhat similar to the type worn by German paratroops was illustrated in a Japanese magazine late in 1942 (Figure 30). Tight fitting, it was to be worn over the standard uniform. It is sleeveless, with short trousers which fasten at the knee. The turned-down collar has space for rank insignia. Gloves and a close-fitting helmet complete the outfit. As shown in the picture, the number of snaps and fastenings and the inaccessibility of the pockets would offset the advantages of this streamlined creation.

Men encountered in the Leyte landings in 1944 wore green clothing combinations like those of the average ground soldier, consisting of long-sleeved shirts made of a loosely woven fabric, and breeches of closely woven cotton twill.

The Navy parachute troops wear a two-piece uniform, made of a greenish-brown material which is 50 percent cotton and 50 percent silk. The trousers are worn with adjustable suspenders. The trouser legs taper and are fitted with a silk-wrapped rubber instep. There are five pockets—one at the left hip designed to hold signal flags with telescoping rods, a snap-

fastened pocket on each calf, and two general-purpose, snap-fastened hip pockets. The jacket is of the same material, fastening with five snaps in the front. A narrow rubber waistband and collar insure a snug fit. The jacket is hip-length. It has five pockets: a narrow pistol pocket high on the right side, grenade pockets just below each breast, and a general-purpose, snap-fastened pocket below each grenade pocket. This uniform is worn winter and summer.

In addition, a flight overall is worn in winter. It is of a heavy silk-and-cotton, dark brown material, lined with rabbit fur. The belt is attached. It has the same pockets as the uniform described above, except the lowest pockets on the calf are somewhat longer. The overall fastens with a zipper in front, and is ordinarily taken off prior to the jump.

Headgear follows the general pattern of those of U. S. tank crews. A buff-colored crash helmet for Army parachute troops, with ear flaps and chin straps, has been noted, as has a special shockproof helmet (Figure 31). The helmet worn by Japanese Navy parachutists has been described as close fitting, made of brown leather with a red silk band at the level of the temples, thick cotton ear pads, and a leather band to cover the mouth. This fastens with a snap at the right end, and a buckle on the left end. A fur-lined version of this garment is worn in winter. Prior to the jump this flight helmet is replaced by the paratroops' standard cap (same material as uniform; havelock style with flaps in back and on each side) worn under the Navy steel helmet.

Special footgear, reaching halfway to the calf and designed for ankle support, is usually worn. Rubber boots also have been used. The Navy issued velvet-lined brown leather boots, with silk laces, $\frac{1}{2}$ -inch rubber soles,



Figure 30.—Experimental jump suit worn over the standard uniform. This short coverall fits over the equipment.

and 1-inch rubber heels. On Leyte, however, the paratroops wore the regular Japanese Army wrap leggings and canvas rubber *tabi* (bifurcated shoes).

The clothing worn under the uniform is not unusual. A cream-colored undershirt, buttoning down the front, with elbow-length sleeves and a wide, open collar (to fold over outside jacket collar); cotton *fundoshi* (loin cloth) or drawers; and ordinary issue white socks are standard for summer for the Navy paratroops. In winter, a dark blue, heavy woolen sweater-shirt with wrist-length sleeves and dark blue, heavy woolen underpants, ankle length with elastic ankle bands, are worn over these garments, while heavy wool issue socks replace the others.

The only gloves described are unlined, five-fingered ones made of brown leather, with a 1-inch rubber band around the wrist.



Figure 31.—Shock-resisting helmet, worn by Army paratroops. Army star insignia is on the front.

Insignia

Insignia of branch of service worn by parachutists also varies. The arm band reported worn by Army paratroops is as shown in Figure 32. It was instituted on 10 September 1942 for "the Raiding Force commander and officers and their subordinates who are attached to a Raiding Force and

have been appointed as parachutists." The design represents the golden kite, legendary bird of Japanese history which, by the dazzling light of its plumage, so blinded the enemy host facing the Emperor Jimmu Tenno that the course of the battle was changed. Golden thread or yellow silk was to form the representation of the kite and handle of the spear; silver thread or white silk, the head of the spear, and the rest of the design was of scarlet silk embroidery. The background of the insignia was to be brown woolen cloth. This distinctive arm band was to be worn on the right arm, (4.7 inches) below the shoulder seam, on both winter and summer clothing. It



Figure 32.—"Golden Kite" sleeve insignia worn by Army paratroops. Golden, silver and scarlet embroidery form the design, which is on a brown background.

was to be worn with the good-conduct chevron, if the wearer had been given this award. Information concerning this arm band is from captured orders only—it has not been reported seen in action.

Navy paratroops wear a more orthodox designation of specialty, a circular patch, but in Japan only (Figure 33). Worn on the left shoulder,



Figure 33.—Distinctive sleeve insignia worn by Navy paratroops. Colors of patch are dark blue and red for the winter uniform; black and white for the summer uniform.

the insignia is composed of two crossed, open parachutes superimposed over a Navy anchor. A cherry blossom above the anchor completes the design. The insignia to be worn with the winter uniform has a dark blue background on which the designs are superimposed. The parachutes, anchor, and cherry blossom are done in red. The suspension lines are black on white background. The insignia for the summer uniform has a white background with black parachutes, anchor, and cherry blossom.

In 1944 a report was made of a breast badge of the type worn on the uniform in combat regions by all ground troops. Hand-made, it was a white cloth patch with an appended design (a simple representation of an open parachute) and identifying inscription in black.

Individual Equipment

Parachute troops wear special packs and carriers for their equipment. The first ones observed wore a belt and suspender of very light webbing, supporting two rows of pouches for weapons and ammunition. Attached to the belt was a pistol holster, binocular case, haversack, water bottle, and bayonet frog. The men in the Leyte operations wore special canvas carriers, apparently issued only to paratroops, which were strapped to the outer portion of the thigh and leg. Each man could wear two of these, one on each side. These special carriers usually contained weapons and demolition equipment. Extensive use was made of other bags, resembling our canvas dispatch cases, for personal equipment such as extra socks, concentrated rations, first-aid pouch, a piece of rope, and an extra shirt. Canteens were universally carried on a strap over the shoulder.

An unusual item in the listing of the Navy paratroops clothing is a special sword chap for officers. It is strapped to the left leg and secures the officer's sword for the jump. Release is with a cord. The sword is a recognized symbol of authority, worn by higher ratings and officer personnel on special duty.

Rations and Water

Sources do not often distinguish between Japanese Army and Navy paratroop rations. It is believed that the Japanese initially planned an ordinary 3-day ration to be carried in the haversack of each paratrooper. These rations provided an adequate diet and consisted of $2\frac{1}{4}$ pounds of rice, two tins of canned fish, two tins of canned meat, and 1 ounce of tea. Chocolate is also known to have been carried by some paratroopers; while glucose sweets, cigarettes, minor medical supplies (iodine, bandages, etc.),

and a flask of rum were carried by parachutists in the Netherlands East Indies.

Regulations issued as late as August 1944, however, provide that a 2-day ration is to be carried by each paratrooper during descent. It is reasonable to assume that ration components are similar to the earlier issue.

In addition, paratroopers were to carry "iron" rations. These were in wafer form, consisting of ground rice and wheat with some sesame. To supplement the wafer, paratroopers were fed extract of mussel flesh, dried plums, preserved ginger, crushed bean meal, and *mori* (made of dried seaweed which contains alkaline substance, soda, and iodine). One meal weighed 200 grams (7 ounces). The Japanese claim that these rations, by test, have withstood the climatic conditions of Malaya, the East Indies, the Philippine Islands, China, Manchuria, and Siberia.

Japanese parachutists dropped in Hunan Province of China in the summer of 1944 were reported to have carried a small bamboo box containing about 1.36 pounds of white "flour." This specially-prepared flour, when mixed with either hot or cold water, changes to a sweet paste which is used as a staple food. One 1.36-pound unit of "flour" provided sufficient food for one man for a period of 1 week.

For water, each paratrooper probably still carries the regular canteen. It is reported "water sausages" also have been used. These appear to be a water-filled length of a tough cellophane-like substance tied into short lengths. These are bitten into as needed and the contents drunk. In use, they are supposed to be carried either in pockets or slung around the neck. Small tubular filters, presumably for drinking water from untested sources, may also be carried.